

# Revision of the Australian Dromiine ground beetles, formerly placed in the genus *Microlestes* SCHMIDT-GÖBEL

(Coleoptera, Carabidae, Lebiinae)\*

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## Abstract

The Australian Dromiine ground beetles are revised. All Australian species, formerly included in the genus *Microlestes*, as well as *Microlestes cinctus* DARLINGTON from New Guinea, are transferred to a new genus *Microlestodes* gen nov. A new genus *Mooreana* gen nov. is also erected on *Mooreana quadrimaculata* spec. nov. from North Queensland. Following species are newly described: *Microlestodes parallelus* spec. nov., *M. flavicornis* spec. nov., *M. pseudohumeralis* spec. nov., *M. rufoniger* spec. nov., *M. inoculatus* spec. nov., *M. zonatus* spec. nov., and *M. ovatus* spec. nov. For *M. ovatus* a new subgenus *Cyclolestodes* subgen. nov. is erected.

The phylogenetic state of the Australian Dromiini is discussed and the supposed relationships of the species are described in a cladistic diagram. Distribution and relationships of the species point to evolution of genus *Microlestodes* within Australia with the supposed centre of evolution in (north) eastern Australia, where the Dromiine fauna is most diverse. From that source stocks of different species groups spreaded to southwestern and northwestern Australia, respectively, where now derivative endemic species live. The dry centre and west, however, is extremely poor in species, which leads to the assumption that *Microlestodes* are mesophilous beetles of open forest country to mountain forests. Actually, however, very little is known on the habits of nearly all species.

## Introduction

Four Australian species were thus far included in the Lebiine genus *Microlestes*. Three were originally described as *Dromius* species: *Dromius humeralis* MACLEAY (= *Microlestes macleayi* CSIKI), *Dromius yarrae* BLACKBURN, and *Dromius australiensis* SLOANE. The fourth is *Microlestes atrifasciatus* SLOANE. Few years after SLOANE transferred all species to *Microlestes* (SLOANE 1910), HOLDHAUS (1913) stated that at least *M. atrifasciatus* and *M. humeralis* could not belong to *Microlestes*, and he supposed that this applies also for *M. yarrae* and *M. australiensis*. CSIKI (1932) in the *Coleopterorum Catalogus*, however, classed all species under *Microlestes*, but in a separate group. The classification of the Australian "*Microlestes*" remained also further doubtful. While JEANNEL (1942, 1949) did not record the genus from Australia, HABU (1967) and DARLINGTON (1968) did. MATEU

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(1963), on the other hand, denied the occurrence of any *Microlestes* in Australia and New Guinea. In the latter island, however, the genus occurs presumably with one species (*M. curtatus* DARLINGTON). Hence the status of the Australian "*Microlestes*" merits further attention.

On several trips through northern Australia I had the opportunity to collect various species of "*Microlestes*", some being apparently new. As there are other undescribed species in the large Australian and American collections, a thorough revision of the whole Australian "*Microlestes*" material is justified, the more, as it is rather obscure, what the Australian "*Microlestes*" actually are. Altogether 908 specimens have been studied for this revision.

Since last 30 years several new genera have been described within the Lebiine tribe Dromiini, especially from the relationship of the common genera *Microlestes* and *Syntomus* (*Metabletus*). For the purpose of this revision, some neotropical genera described by MATEU (for the names see REICHARDT 1977) are not taken into account. But there are several Palearctic and Aethiopic genera as *Mesolestes* SCHATZMAYR, *Neomesolestes* MATEU, *Pseudomesolestes* MATEU, *Paramesolestes* MATEU, *Mesolestinus* MATEU, and *Metadromius* BEDEL (see MATEU 1960, 1974), mostly erected for species formerly described as *Microlestes*, which could compete for being congeneric with the Australian "*Microlestes*". I am not sure, however, to what extent all of these new genera actually merit generic rank. Anyway, the large genus *Microlestes* in its modern sense is restricted to species combining following external characters: Mentum without tooth, bisetose; glossa bisetose; paraglossae completely encircling glossa; antennae pilose from 2nd or 3rd segment; pronotum with base medially lobate; elytra with two pores on 3rd interval; humeral and apical groups of marginal pores not widely separated; apex of elytra rather straight, not oblique nor much sinuate; claws denticulate. Judging from the combination of these characters, none of the Australian species belongs to *Microlestes*. Moreover, they do not seem to belong to anyone of the other described genera, although they share some characters with other genera. Apart from one new species from extreme northern Queensland, all Australian species are rather similar in most diagnostic features, although they exhibit striking differences in colour and pattern. Hence they are included in one genus. One apterous species, however, merits the rank of a separate subgenus. The unique northern Queensland species shows such a combination of characters as precluding the incorporation into anyone existing genus, too.

Very little is known on the habits of the Australian "*Microlestes*", in spite of the numerous specimens available, because most specimens were either caught at light, without any specification of habitat preference, or as they do not bear at all any exact locality data.

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### Abbreviations of collections used in text

ANIC	– Australian National Insect Collection, Canberra
BMH	– Bernice P. Bishop Museum, Honolulu
BMNH	– British Museum Natural History, London
CAS	– California Academy of Science, San Francisco
CBM	– Collection M. Baehr, München
CMC	– Collection B. P. Moore, Canberra
FMT	– G. Frey Museum, Tutzing
MCZ	– Museum of Comparative Zoology, Cambridge/Mass.
NMV	– National Museum of Victoria, Melbourne
SAM	– South Australian Museum, Adelaide
WAM	– Western Australian Museum, Perth
ZSM	– Zoologische Staatssammlung, München

### Measurements

Measurements were made under a stereomicroscope using an ocular micrometer. Length has been measured from apex of labrum to apex of elytra, because in pinned specimens the abdomen may more or less protrude posteriorly. This is important for comparisons with measurements of other authors.

### Distribution maps

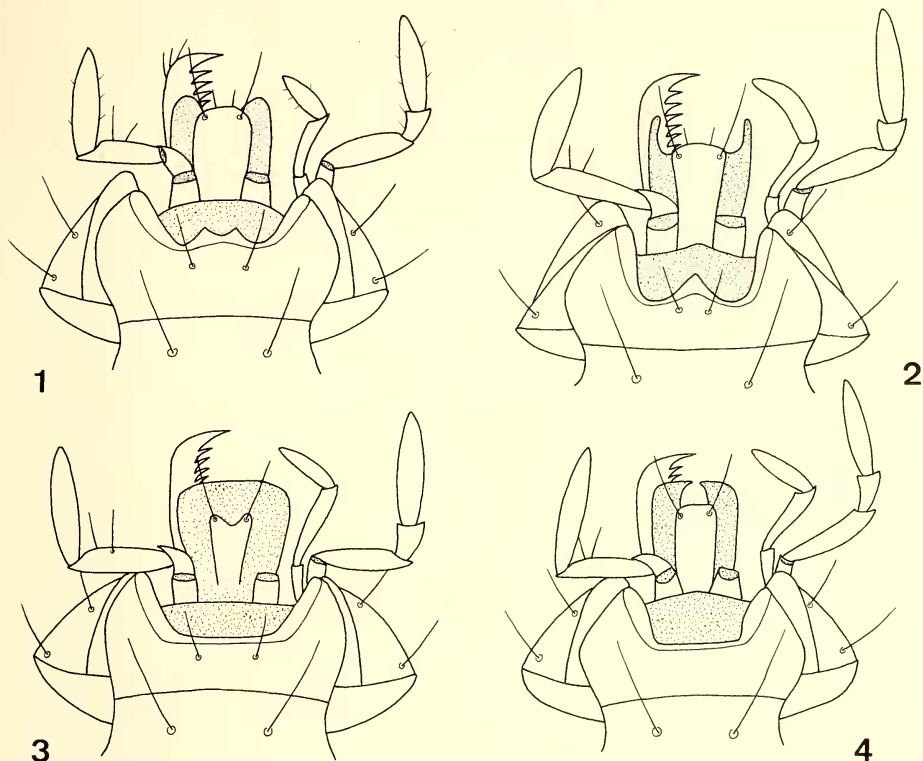
Maps are prepared from label data of examined specimens only. Localities of older specimens not localized and pure state records are not indicated in the maps. Literature records are omitted, because it is impossible to decide to which species they actually refer.

### Characters

For definition of genera and subgenera the characters mentioned in the introduction were used. For species differentiation external characters like pattern, colour, size, body shape and some width/length ratios are useful. Most Australian species can be separated

Distribution (in Australia) (Fig. 36): Northern and eastern Queensland.





Figs. 1-4. Lower surface of head. 1. *Syntomus quadripunctatus* (SCHMIDT-GÖBEL); 2. *Mooreana quadrimaculata*, gen. nov., spec. nov.; *Microlestes curtatus* (DARLINGTON); *Microlestodes zonatus*, gen. nov., spec. nov.

Material examined (4 specimens): 2 ♂♂, Cardstone, Qld. 26. XI. 1966 (ANIC); 1 ♀, Bunya Mt. 1000 m, Qld., 16. XII. 1981, barber trap, M. Baehr (CBM); 1 ♀, Jourama Falls NP, 20. III. 1982, J. Doyen (CAS).

### **Mooreana gen. nov.**

(Figs 2, 19, 25, 36)

Diagnosis: Genus of subfamily Lebiinae and tribe Dromiini. Small species (under 3,5 mm) with the combination of following characters: Mentum with unidentate tooth; mentum bisetose; paraglossae apically free, considerably surpassing glossa, barely incurved; glossa with two large and two small setae at apex; penultimate segment of labial palpi bisetose; terminal segments of both palpi extremely sparsely pilose; antennae pilose from 4th segment; base of pronotum medially slightly lobate; elytra with two pores on 3rd interval; humeral and apical groups of marginal pores not separated; humeral group

consisting of 5, apical group of 8 pores; lateral apical pores in two groups of 3 pores each (as in *Syntomus*); apex of elytra barely sinuate; claws denticulate.

So far only one species known.

***Mooreana quadrimaculata* spec. nov.**

(Figs 2, 19, 25, 36)

Types: Holotype: ♂, Claudie R. nr. Iron Rge, Qld. 19.–25. VII. 1978, J. F. Lawrence (ANIC). – Paratypes: 1 ♂, 2 ♀♀, same locality, same date (ANIC, CBM) 1 ♀, Cape York Pen., Iron Range, N. Q., 20. V. 1974, Collr. M. Walford-Huggins (CMC).

Type locality: Claudie River, Iron Range, Cape York Peninsula, extreme northern Queensland.

Diagnosis: Single species of genus *Mooreana*, easily distinguished by unidentate mentum, very wide, short pronotum, and wide, quadrimaculate elytra.

Measurements: Length: 2.95–3.5 mm; width: 1.3–1.55 mm, ratio width/length of pronotum: 1.57–1.59; ratio widest part/base of pronotum: 1.19–1.2; ratio length/width of elytra: 1.38–1.39.

Colour (Fig. 19): Dark piceous, each elytron with two large yellow spots. Basal spot elongate, occupying the space from 4th to 7th interval, medially removed from base, laterally leaving only a narrow dark border at shoulder. Anterior border of posterior spot transverse, spot reaching from 4th to 7th interval, posteriorly even transgressing to 3rd interval. Antennae, mouthparts, and legs dark yellow, lower surface reddish, laterally piceous.

Table 1. Number of marginal elytral setae in Australian *Syntomus*, *Mooreana*, and *Microlestodes*. b. basal group, a. apical group. Grouping of apical setae in brackets.

	b	a
<i>Syntomus quadripunctatus</i>	5	8 (3, 3, 2)
<i>Mooreana quadrimaculata</i>	5	8 (3, 3, 2)
<i>Microlestodes yarrae</i>	5	9
<i>M. australiensis</i>	5	8
<i>M. parallelus</i>	5	8
<i>M. flavicornis</i>	5	8
<i>M. macleayi</i>	5	8
<i>M. pseudohumeralis</i>	5	8
<i>M. rufoniger</i>	5	8
<i>M. inocularis</i>	5	8
<i>M. atrifasciatus</i>	5	9
<i>M. zonatus</i>	5	7 (rarely 8 on one side)
<i>M. cinctus</i>	5	9
<i>M. ovatus</i>	5	6 (2, 2, 2)

Head (Fig. 19): Very wide. Eyes large, protruding, orbits very small. Mandibles rather elongate, apex strongly curved. Antennae short, compact, median segments c. as long as wide, pilose from 4th segment. Mentum with strong, unidentate tooth and two setae behind tooth. Submentum also bisetose. Glossa apically widened, with two long and two short setae. Paraglossa apically free, strongly surpassing glossa, not incurved. Palpi rather elongate, nearly smooth. Surface of head distinctly, but rather superficially microreticulate, meshes isodiametric.

Pronotum (Fig. 19): Wide and short, base slightly wider than apex. Apex evenly concave, anterior angles widely rounded off. Sides convex, curvature slightly uneven behind anterior lateral setae. Prebasal sinuosity conspicuous, posterior angles nearly right, slightly produced. Base medially not much lobate. Lateral parts of base little oblique. Base strongly bordered. Marginal channel shallow. Median line distinct, anteriorly and posteriorly shortened. Surface strongly, but superficially microreticulate, meshes transverse.

Elytra (Fig. 19): Wide and short, slightly widened in posterior half, behind a shallow sinuosity in first third. Shoulders rounded off. Apex barely sinuate, oblique. Shoulders bordered to near scutellum. Striae deep, intervals perceptibly convex. 3rd stria with two setae slightly in front of middle and at posterior third. Humeral and apical groups of marginal setae not interrupted by a space, lateral setae of apical group in two separate groups of 3 setae each. Surface densely microreticulate, meshes strongly transverse. Winged.

Lower surface: Metepisternum very elongate, median border nearly 3 x as long as anterior border. Last abdominal sternite in ♂ bisetose, in ♀ with two additional small setae in middle. ♀ last abdominal sternite medially notched.

Legs: 1st–3rd segments of ♂ anterior tarsus biserially clothed. Claws toothed with c. 3 distinct teeth.

♂ aedeagus (Fig. 25): Elongate, narrowed to apex. Orificium large, strongly turned, without internal teeth. Tip acute, not curved.

Variation: Apart from size little variation noted.

Distribution (Fig. 36): Mid of Cape York Peninsula at or near Iron Range, Queensland.

Material examined (5 specimens): Only type series.

Habits and activity period: Habits unknown, specimens were collected in May and July.

*Microlestes* SCHMIDT-GÖBEL  
(Fig. 3)

SCHMIDT-GÖBEL, 1846, p. 41

Csiki 1932, p. 1420

Darlington 1968, p. 136

Actually this genus was thus far not recorded from Australia. One species, however, occurs perhaps in New Guinea.

**Microlestes curtatus** DARLINGTON, 1968

DARLINGTON, 1968, p. 136

See DARLINGTON (1968) for description, range etc. I saw several paratypes of this species, most from Philippines, and one specimen from Dory, New Guinea (MCZ). The doubtful record for New Guinea is based on two specimens collected by Wallace at Dorey, western New Guinea. However, as DARLINGTON (1962) stated, Wallace's records from New Guinea are rather doubtful.

*M. curtatus* is certainly a species of *Microlestes* s. str. and altogether, this would be the single *Microlestes* to occur in the Australian Region.

Table 2. Size and some measurements of the Australian *Mooreana* and *Microlestodes*. 1. Length; 2. Ratio width/length of pronotum; 3. Ratio widest part/base of pronotum; 4. Ratio length/width of elytra; 5. Ratio length/width of 6th antennal segment. N. Number of specimens measured.

	1	2	3	4	5	N
<i>Mooreana quadrimaculata</i>	2.95–3.5	1.57–1.59	1.19–1.2	1.38–1.39	1 –1.05	4
<i>Microlestodes yarrae</i>	3.4 –4.2	1.21–1.24	1.15–1.24	1.48–1.52	1.9 –2	8
<i>M. australiensis</i>	2.8 –3.1	1.27–1.33	1.25–1.28	1.45–1.48	1.3 –1.4	8
<i>M. parallelus</i>	3.2 –3.35	1.24–1.27	1.2 –1.22	1.56–1.57	1.35–1.4	5
<i>M. flavicornis</i>	2.9 –3.35	1.32–1.37	1.19–1.22	1.41–1.43	1.3 –1.35	8
<i>M. macleayi</i>	3.1 –3.85	1.2 –1.28	1.21–1.24	1.46–1.52	1.5 –1.65	10
<i>M. pseudohumeralis</i>	3 –3.5	1.23–1.29	1.19–1.21	1.43–1.5	1.55–1.65	6
<i>M. rufoniger</i>	3.1 –3.8	1.32–1.39	1.17–1.19	1.44–1.48	1.55–1.65	8
<i>M. inoculatus</i>	3 –3.6	1.28–1.32	1.16–1.21	1.42–1.45	1.5 –1.6	8
<i>M. atrifasciatus</i>	3.25–3.9	1.3 –1.37	1.2 –1.21	1.38–1.42	1.45–1.55	8
<i>M. zonatus</i>	3.7 –4.1	1.31–1.35	1.2 –1.24	1.45–1.5	1.25–1.35	8
<i>M. ovatus</i>	2.4 –3	1.32–1.42	1.16–1.2	1.28–1.35	1.45–1.55	8

**Microlestodes gen. nov.**  
(Fig. 4)

Species belonging to this genus were originally described as *Microlestes* or *Dromius*, the latter ones were subsequently transferred to *Microlestes* (SLOANE 1910).

Diagnosis: Genus of subfamily Lebiinae and tribe Dromiini. Small species (up to 4.2 mm) combining following characters: Mentum without tooth and without setae; paraglossae surpassing, but not encircling glossa, apex of paraglossae somewhat incurved; glossa bisetose; penultimate segment of labial palpi bisetose; antennae pilose from 4th segment; base of pronotum medially lobate; elytra with two dorsal pores on 3rd interval. Humeral and apical groups of marginal pores not or moderately separated by a space free

of pores; humeral group consisting of 5, apical group of 6–9 pores; apex of elytra not much sinuate, rather transversely cut off; claws denticulate.

Type species: *Microlestes macleayi* CSIKI, 1932 (= *Dromius humeralis* MACLEAY, 1871)

The genus *Microlestodes* is composed of several well defined species groups, characterized as well by external characters as by structure of aedeagus. One species, however, merits the rank of an own subgenus.

#### Key to subgenera of *Microlestodes* gen. nov.

1. Elytra ovoid, convex. Wings absent, metepisternum short, quadrate. Basal and apical groups of marginal pores distinctly separated by a space. Apical group consisting of 6 pores only, the anterior 4 clearly divided into two groups . . . . . *Cyclolestodes* subgen. nov.
- Elytra elongate, depressed, wings present or reduced. Metepisterna at least 1.5× as long as wide. Basal and apical groups of lateral pores not or only slightly separated by a space. Apical group consisting of 7–9 pores, not clearly divided in groups . . . . . *Microlestodes* s. str.

#### Key to Australian and New Guinean species of genus *Microlestodes* gen. nov.

1. Elytra blackish with more or less metallic lustre, without distinct pattern (doubtful cases also considered under 7.) . . . . . 2.
- Elytra with more or less distinct yellow or red pattern . . . . . 7.
2. Elytra ovoid, convex. Metepisterna quadrate. Only 6 pores present in apical group of marginal pores. Apterous . . . *M. (Cyclolestodes) ovatus* spec. nov.
- Elytra elongate, depressed. Metepisternum elongate, median border at least 1.5× as long as anterior border. At least 7 pores present in apical group of marginal pores. Winged or apterous . . . . . 3.
3. Large species, 3.4–4.2 mm long. Pronotum not sinuate in front of posterior angles. Surface strongly iridescent. Elytral punctures at 3rd interval foveate. Wings reduced . . . . . *M. (s. str.) yarrae* (BLACKBURN)
- Smaller to rather large species, 2.8–3.9 mm long. Pronotum more or less sinuate in front of posterior angles. Surface less iridescent. Elytral punctures not foveate, difficult to see. Fully winged . . . . . 4.
4. Elytra with vague red areas at shoulders and with an indistinct common median spot near apex. Aedeagus with 2–3 teeth at bottom of orificium . . . . . *M. (s. str.) pseudohumeralis* spec. nov.



- Elytra at most with traces only of lighter areas behind shoulders, without median common spot near apex. Aedeagus with or without teeth at bottom of orificium . . . . . 5.
- 5. Elytra wider, ratio length/width under 1.5, laterally more convex. Striae less impressed, less punctate. Aedeagus with short apex, without teeth or with one tooth . . . . . 6.
- Elytra narrower, laterally less convex, ratio length/width 1.55 or more. Striae slightly more impressed, more punctate. Aedeagus with elongate apex and two or more teeth at bottom of orificium . . . . . *M. (s. str.) parallelus* spec. nov.
- 6. Antennae infusate. Pronotum slightly narrower, ratio width/length c. 1.3. Aedeagus short, convex, not depressed dorsoventrally in front of orificium, ventral surface evenly convex (Fig. 27). Without conspicuous tooth at bottom of orificium . . . . . *M. (s. str.) australiensis* (SLOANE)
- Antennae yellow. Pronotum wider, ratio width/length c. 1.35. Aedeagus more elongate, dorsoventrally depressed in front of orificium, ventral surface bisinuate (Fig. 29). With a conspicuous tooth at bottom of orificium . . . . . *M. (s. str.) flavicornis* spec. nov.
- 7. Elytra black with a narrow yellow vitta behind anterior third and two lateral, subapical, transverse spots. Pronotum very wide, ratio width/length c. 1.48 . . . . . *M. (s. str.) cinctus* (DARLINGTON)
- Elytral pattern different. Pronotum less wide, ratio width/length under 1.4 . . . . . 8.
- 8. Elytra light with a narrow dark vitta in posterior half. Striae deeply impressed. 7 or 9, seldom 8 pores present in apical group of marginal pores . . . . . 9.
- Posterior two thirds of elytra dark, with or without a common, median, preapical light spot. Striae superficial. Always with 8 pores in apical group of marginal pores . . . . . 10.
- 9. Elytral vitta rather v-shaped, posterior border of vitta strongly oblique. Pronotum basally wide, sinuate in front of posterior angles. With 9 pores in apical group of marginal pores . . . . . *M. (s. str.) atrifasciatus* (SLOANE)
- Elytral vitta wide, transverse, anterior border slightly advanced within 5th interval, posterior border slightly advanced only in middle. Pronotum basally narrower, not perceptibly sinuate in front of posterior angles. with 7, rarely 8 pores in apical group of marginal pores . . . . . *M. (s. str.) zonatus* spec. nov.
- 10. Elytra without common, median, preapical spot. Borders of dark areas extremely ill defined. Aedeagus with short, knob-like apex . . . . . *M. (s. str.) inoculatus* spec. nov.
- Elytra with median, common, preapical spot. Borders of dark areas better limited. Aedeagus with short or more elongate, though not knoblike apex . . . . . 11.

11. Head, pronotum, and dark parts of elytra black. Dark area of elytra extremely well limited, pattern conspicuous. Pronotum wider, ratio width/length over 1.3. Aedeagus with very short apex . . . . . *M. (s. str.) rufoniger* spec. nov.
- Pronotum and dark parts of elytra at most piceous. Dark area of elytra rather ill defined. Pronotum narrower, ratio width/length under 1.3. Aedeagus with fairly elongate apex. . . . . 12.
12. Antennae and palpi completely yellow. Elytral pattern vivid, light areas yellow to reddish. Eyes large, protruding, length ratio orbit/eye under 0.25 . . . . .  
. . . . . *M. (s. str.) macleayi* (CSIKI)
- Antennae and palpi infusate. Elytral pattern vague, “light” areas rather dark reddish to brown. Eyes smaller, less protruding, length ratio orbit/eye 0.3 or more . . . . . *M. (s. str.) pseudohumeralis* spec. nov.

Subgenus *Microlestodes* s. str.

***Microlestodes yarrae* (BLACKBURN, 1892), nov. comb.**

(Figs 5, 12, 26, 36)

*Dromius yarrae* BLACKBURN, 1892, p. 71

Sloane 1910, p. 405 (*Microlestes*)

Holdhaus 1913, p. 538 (*Microlestes* ?)

Sloane 1920, p. 176 (*Microlestes*)

Csiki 1932, p. 1428 (*Microlestes*)

Type locality: Upper Yarra, Victoria.

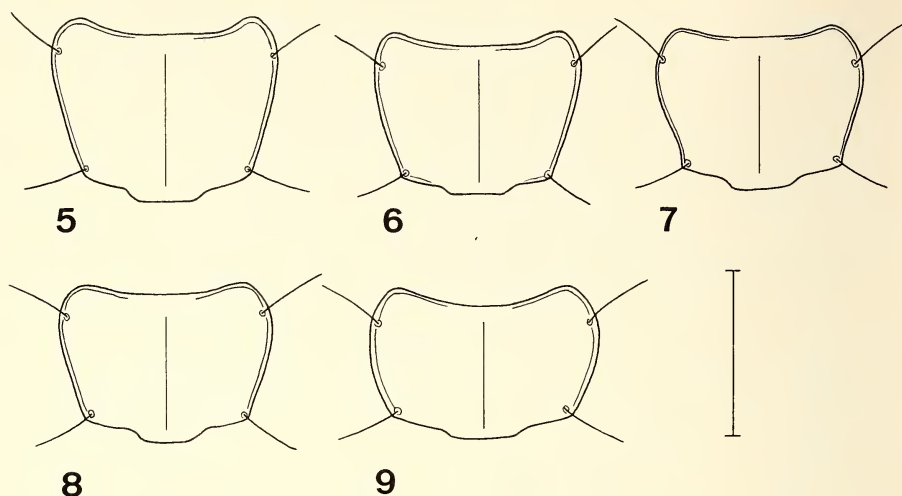
Types: Not seen. Holotype should be in Blackburn Coll. in BMNH, but cannot be localized there, according to N. E. Stork (in litt.).

Diagnosis: Easily distinguished by large size, absence of wings, strongly iridescent, metallic lustre of upper and lower surface, foveiform elytral pores, and laterally not sinuate pronotum.

Measurements: Length: 3.4–4.2 mm; width: 1.45–1.65 mm; ratio width/length of pronotum: 1.21–1.24; ratio widest part/base of pronotum: 1.15–1.24; ratio length/width of elytra: 1.48–1.52.

Colour: Dark piceous, upper and lower surface with strong metallic iridescence, especially on elytra. Lateral border, suture near apex and an extremely ill defined spot behind shoulders feebly lighter. Legs dark yellow, tip of femora and tibiae, and tarsi slightly infusate. Mouthparts light brown, antennae piceous, 1st segment slightly lighter.

Head: Just slightly narrower than pronotum. Eyes large, though not much protruding, orbits rather large. Palpi and antennae elongate. Surface of head with very strong, isodiametric microreticulation.



Figs. 5–9. Pronota of *Microlestodes* species. 5. *M. yarrae* (BLACKBURN); 6. *M. australiensis* (SLOANE); 7. *M. macleayi* (CSIKI); 8. *M. atrifasciatus* (SLOANE); 9. *M. cinctus* (DARLINGTON); scale: 0.5 mm.

Pronotum (Fig. 5): Slightly wider than long, apex as wide as base, widest at anterior lateral seta. Anterior angles protruding, though completely rounded off, lateral borders straight or slightly convex, without any sinuosity in front of posterior angles which are marked at most by a tiny obtuse knob. Median lobe of base produced, base laterally strongly oblique and convex. Median line nearly complete, deep. Surface strongly microreticulate with isodiametric to slightly transverse meshes.

Elytra (Fig. 12): Rather short and wide, depressed, c.  $1.5\times$  as long as wide, widest at posterior third. Shoulders obliquely rounded, lateral borders convex throughout, apex feebly sinuate. Striae superficial. Pores on 3rd interval slightly foveate. Surface with microsculpture of very close transverse lines. Wings atrophied.

Lower surface: Strongly iridescent due to dense microsculpture. Metepisternum moderately elongate, median border c.  $1.5\times$  as long as anterior border. Last abdominal sternite of both sexes medially sinuate, bisetose.

Legs: 1st – 3rd segments of ♂ anterior tarsus slightly widened, each with two rows of adhesive hairs.

♂ aedeagus (Fig. 26): Rather compact, narrowed to apex. Apex short and blunt, slightly thickened. Orificium turned to left side, with strongly sclerotized border at lower and posterior rim which is conspicuously invaginated. Orificium ventrally with a sclerotized bar furnished with about 5 short teeth. Left paramere elongate.

Variation: There is considerable variation of size and also some variation of shape of pronotum, but altogether it is a very homogenous, taxonomically fairly isolated species.

Distribution (Fig. 36): New South Wales, Victoria, and Tasmania.

Material examined (110 specimens):

New South Wales: 1 ♀, Mulwala, Coll. Sloane, 26. VI. 1895 (ANIC); 1 ♀, Mulwala, Coll. Sloane, Coll. Andrewes (BMNH); 2 ♀♀, Mulwala, H. J. Carter Coll. 20. IV. 1922 (NMV); 2 ♂♂, Mulwala (SAM); 1 ♀ (SAM).

Victoria: 1 ♀, Melbourne, F. E. Wilson, 11. V. 1919 (NMV); 1 ♀, Melbourne, F. E. Wilson, 4. V. 1919 (NMV); 2 ♀♀, Melbourne, C. B. Cole, 6. V. 1919 (NMV); 4 ♀♀, Woori Yallock, F. G. Wilson (NMV); 1 ♀, Launching place, C. Oke, 5. X. 1918 (NMV); 1 ♂, 1 ♀, Moe, C. Oke, VII. 1930 (NMV); 1 ♂, Caulfield, C. Oke, IX. 1921 (NMV); 1 ♂, Yarra Glen, Moore, 17. X. 1959 (CMC); 21 (♂♂, ♀♀), Sale, Darlingtons, 1. X. 1957 (MCZ); 20 (♂♂, ♀♀), Portland to Pt. Fairy, Darlingtons, IX. 1957 (MCZ, CBM); 37 (♂♂, ♀♀), Winchelsea, Darlingtons, IX. 1957 (MCZ, CBM); 1 ♂, French Coll. (NMV).

Tasmania: 1, New Norfolk, Lea (MCZ); 1 ♂, 2 ♀♀, New Norfolk, Lea (SAM); 1 ♂, New Norfolk (SAM).

State ? : 1 ♂, 1 ♀, Emerald Distr. (NMV); 2 ♂♂, 2 ♀♀ (NMV).

Habits and activity period: The habits of this species are largely unknown. Perhaps it lives in leaf litter of mountain forests, as it is not winged. Dated specimens have been captured from April to July and in September and October.

***Microlestodes australiensis* (SLOANE, 1899), nov. comb.**

(Figs 6, 134, 27, 37)

*Dromius australiensis* SLOANE, 1899, p. 583.

Sloane 1910, p. 405 (*Microlestes*)

Holdhaus 1913, p. 538 (*Microlestes* ?)

Csiki 1932, p. 1427 (*Microlestes*)

Type locality: Mulwala, Junee and Grenfell, New South Wales.

Types: There are 5 specimens available from the Sloane Coll. (ANIC), mounted on the same card. One is signed with an ink written "T" which possibly means "type". The card is labelled: "Mul. 26.6.98" and "*Microlestes australiensis* SL.", both labels perhaps written by Sloane himself; and "Holotype" (printed), "*Microlestes australiensis* SL. P.J.D.", written by Darlington, and bears a printed label "Holotype".

Most likely the type specimen was not selected by Sloane himself, presumably not even a type series was designated, since Sloane's determination label cannot be the original label. Hence, these specimens cannot be regarded the holotype and paratypes, respectively. On these grounds I herewith designate the specimen marked by a "T" the lectotype, the other four specimens paralectotypes.

Diagnosis: Small, black, winged species, distinguished by fairly wide elytra, dark antennae, and short compact aedeagus with short apex and without sclerotized teeth.



Measurements: Length: 2.8–3.1 mm; width: 1.2–1.3 mm; ratio width/length of pronotum: 1.27–1.33; ratio widest part/base of pronotum: 1.25–1.28; ratio length/width of elytra: 1.45–1.48.

Colour: Dark piceous to black, head slightly darker than elytra, surface slightly iridescent. Legs dirty yellow, mouthparts and antennae light brown to piceous. Lower surface piceous.

Head: Slightly smaller than pronotum. Eyes large, but not much projecting. Orbits gently oblique. Palpi and antennae rather elongate. Microsculpture not very conspicuous, consisting of longitudinal meshes.

Pronotum (Fig. 6): Wide, slightly heart-shaped, widest at anterior lateral seta. Anterior angles slightly produced, narrowly rounded. Lateral borders convex throughout, with a shallow prebasal sinuosity. Posterior angles small, obtuse. Base medially produced, laterally rather transverse, slightly oblique just behind posterior angles. Median line distinct. Microsculpture rather indistinct, irregularly transverse, medially still less distinct. Surface with scattered, extremely fine punctures.

Elytra (Fig. 13): Rather short and wide, depressed. Shoulders evenly rounded, not oblique, lateral border then nearly straight to slightly convex, apex barely sinuate. Striae superficial, merely a line of fine punctures. Punctures on 3rd interval fine, barely visible. Humeral and apical groups of marginal pores not interrupted in middle, apical group consisting of 8 pores. Microsculpture moderate, consisting of irregular, transverse meshes, intervals with very fine, scattered punctures. Winged.

Lower surface: Metepisternum elongate, at least  $1\frac{3}{4}\times$  as long as wide. Last abdominal sternite in both sexes slightly excised, bisetose.

Legs: 1st–3rd segments of ♂ anterior tarsus slightly widened, biserially clothed.

♂ aedeagus (Fig. 27): Short, compact, widest at orificium, ventral surface evenly curved. Apex short, blunt. Orificium small, turned to left. Without sclerotized teeth in bottom of orificium.

Variation: Some variation of shape of pronotum, otherwise no conspicuous variation noted.

Distribution (Fig. 37): Victoria, southern New South Wales, and extreme southern tip of Western Australia.

Material examined (32 specimens):

New South Wales: 2 ♂♂, 3 ♀♀, Mulwala, 26. VI. 1898, lectotype!, paralectotypes! (ANIC); 3 ♀♀, Mulwala, T. G. Sloane, H. E. Andrewes Coll. (BMNH); 1, Mulwala (MCZ); 1 ♀, Grenfell (SAM); 2 ♂♂, 2 ♀♀, "Calosoma", via Gunderoo, VII. 1977 (CBM, CMC); 1 ♂, 1 ♀ (SAM); 1 ♂, 1 ♀ (NMV).

Victoria: 1 ♀, Fern Tree Gully, C. Oke, VIII. 1926 (NMV); 2 ♂♂, 1 ♀, Kooyong, F. E. Wilson, 14. V. 1919 (NMV); 1 ♂, Hattah, C. Oke, IX. 1927 (NMV).

Western Australia: 2 ♂♂, Augusta, B. P. Moore, 30. VIII. 1959 (CMC).



State ? : 1 ♂, 1 ♀, Black Flat, J. C. Goudia, VI. 1929 (NMV); 3 ♂♂, 1 ♀ (NMV); 1 ♀, „yarrae Blackb.” (SAM).

Habits and activity period: Nothing is known on the habits of this species, with the exception that some specimens are from “leaf litter”. Dated specimens were collected from May to September.

***Microlestodes parallelus* spec. nov.**

(Figs 14, 28, 37)

Type locality: Pine Hill, near Mt. Ragged, southwestern Australia.

Types: Holotype: ♂, 33°18'S, 123°23'E, Pine Hill, 18 km NW by N of Mt. Ragged, WA, 1. XI. 1977, J. F. Lawrence (ANIC). — Paratypes: 2 ♀♀, Wilga, WA, 20. II. 1977, at light, K. & E. Carnaby (ANIC, CBM); 2 ♀♀, 46 km ENE of Norseman, WA, 19. – 20. I. 1982, B. Hanich & T. F. Houston, No 431–1, 431–3 (WAM); 1 ♂, 1 ♀, Fremantle, WA, Walker (SAM); 1 ♂, Bridgetown, WA, Lea (SAM).

Diagnosis: A blackish, elongate species, distinguished from related species by more elongate, parallel elytra and longer aedeagus with more elongate apex and at least 2 teeth.

Measurements: Length: 3.2–3.35 mm; width: 1.25–1.3 mm; ratio width/length of pronotum: 1.24–1.27; ratio widest part/base of pronotum: 1.2–1.22; ratio length/width of elytra: 1.56–1.57.

Colour: Very dark piceous to blackish, head and pronotum nearly black. Legs, mouthparts and antennae brown, 1st antennal segment slightly lighter. Surface not much iridescent.

Head: Slightly narrower than pronotum. Eyes large, but not much protruding, orbits large, very oblique, gently sloping to neck. Palpi rather elongate, last segments of both palpi absolutely smooth. Antennae moderate. Surface densely microreticulate with slightly elongate, longitudinal meshes.

Pronotum: Much as in *M. australiensis*. Rather narrow, gently heart-shaped. Anterior angles produced, apex deeply excised. Lateral borders evenly convex, with gentle prebasal sinuation. Posterior angles obtuse. Median lobe of base produced, lateral parts nearly transverse, oblique just behind posterior angles. Median line anteriorly and posteriorly shortened, superficial. Surface finely microreticulate, with rather irregular, slightly transverse meshes.

Elytra (Fig. 14): Elongate, more than 1.5× as long as wide, rather parallel, just slightly widened to apical third. Shoulders widely rounded, apex feebly sinuate. Striae, at least in middle, fairly impressed, marked by distinct punctures. Median intervals faintly, but perceptibly convex. Punctures on 3rd interval inconspicuous. 8 pores in apical group of marginal pores. Humeral and apical groups not separated. Microsculpture very fine, consisting of irregular transverse lines and meshes. Winged.

Lower surface: Metepisternum elongate, median border nearly twice as long as anterior border. Last abdominal sternite in both sexes slightly excised in middle, bisetose.

Legs: 1st–3rd segments of ♂ anterior tarsus slightly widened, with two rows of adhesive hairs.

♂ aedeagus (Fig. 28): Orificium small, turned to left. Apex slightly elongate. Orificium ventrally with 3 sclerotized teeth.

Variation: According to few specimens available little variation noted. In some specimens, however, elytra posteriorly slightly wider.

Distribution (Fig. 37): Southwestern corner of Western Australia.

Material examined (10 specimens): Apart from type series two further ♀ specimens are doubtfully assigned to *M. parallelus*: 2 ♀♀, Augusta, WA, 30.VIII.1959, B. P. Moore (CMC).

Habits and activity period: Virtually nothing is known on the habits of this species. Two specimens were captured at light, one under stone. So far collected in January, February, August, and November.

### ***Microlestodes flavicornis* spec. nov.**

(Figs 20, 29, 37)

Type locality: Berry Springs, Northern Territory.

Types: Holotype: ♂, 12°41'S, 130°58'E, Berry Springs, N. T., 30 km SSE of Darwin, 11.XI.1972, at light, E. Britton (ANIC); – Paratypes: 1 ♂, Daly River Mission, N. T., 17.VIII.1974, J. Hutchinson (ANIC); 1 ♀, Mainoru, ENE of Katherine, N. T., 14.XII.1982, A. Walford-Huggins (CMC); 1 ♂, Ban Ban Range via Coalstoun Lakes, Q., I.1974, H. Frauca (ANIC); 1 ♂, Mt. Lewis Rd., 5 km, Q., 24.X.1975, Walford-Huggins, Ex rain forest leaf litter (CMC); 1 ♂, 4 ♀♀, Shipton's Flat (S. of Cooktown), VI.1958, Q. Darlingsons (MCZ); 5 ♂♂, 4 ♀♀, N. of Mareeba, N. Q., II.1958, Darlingsons (CBM, MCZ); 1 ♀, Kuranda (v. Cairns), Q., c. 1000', II.1958, Darlingsons (MCZ); 6 ♂♂, 2 ♀♀, W. of Ravenshoe, Atherton Tab. Q., c. 3000', II.1958, Darlingsons (MCZ); 1 ♂, Rockhampton, Qld., III.1958, Darlingsons (MCZ); 3 ♂♂, 5 ♀♀, 30 m. N. of Brisbane, Qld., III.1958, Darlingsons (CBM, MCZ).

Diagnosis: Small, black species, distinguished from related species by completely yellow antennae and palpi, rather wide pronotum and elytra, and aedeagus depressed in front of orificium.

Measurements: Length: 2.9–3.35 mm; width: 1.25–1.4 mm; ratio width/length of pronotum: 1.32–1.37; ratio widest part/base of pronotum: 1.19–1.22; ratio length/width of elytra: 1.41–1.43.

Colour: Piceous-black, surface slightly iridescent. Mouthparts, legs and antennae completely yellow. Lower surface piceous.

Head (Fig. 20): Head and its appendages of average size, rather similar to *M. australiensis*. Eyes large, laterally fairly protruding. Surface finely microreticulate with irregular, elongate meshes and with extremely fine, scattered punctures.

Pronotum (Fig. 20): Rather wide, slightly heart-shaped, wider than head. Base comparatively wide. Anterior angles produced, though completely rounded, apex evenly and fairly deeply excised. Lateral borders convex, sinuate in front of obtuse posterior angles. Median lobe of base wide, produced, lateral parts of base nearly transversal, just near posterior angles slightly oblique. Median line shortened, superficial. Surface with very fine, irregular, transverse microsculpture, more superficially in middle, and with fine punctures.

Elytra (Fig. 20): Wide, depressed, widest at posterior third. Shoulders evenly rounded, lateral borders rather straightly divergent. Apex nearly transverse, with very shallow sinuosity. Striae superficial, feebly punctate. Intervals depressed. Punctures on 3rd interval very inconspicuous. Apical group of marginal pores consisting of 8 pores, humeral and apical groups not interrupted. Microsculpture fine, irregular, consisting of transverse lines and meshes, intervals with fine, scattered punctures. Surface rather iridescent. Winged.

Lower surface: Metepisternum fairly elongate, median border nearly twice as long as anterior border. Last abdominal sternite of both sexes slightly excised in middle, bisetose.

Legs: 1st–3rd segments of ♂ anterior tarsus slightly widened, clothed with two rows of adhesive hairs.

♂ aedeagus (Fig. 29): Moderately elongate. Dorsal side slightly depressed in front of orificium, ventral side gently bisinuate. Apex short, blunt. Orificium ventrally with a sclerotized tooth.

Variation: Little variation noted.

Distribution (Fig. 37): Known from southeastern Queensland through northern Queensland to northern parts of Northern Territory.

Material examined (37 specimens): Only type series.

Habits and activity period: Habits largely unknown, though single specimens collected in rain forest leaf litter and at light. So far captured from January to March, in June, August, October, and December.

#### Note

*M. australiensis*, *M. parallelus*, and *M. flavicornis* are certainly very closely related. Indeed, it might be difficult in some cases to determine what species is concerned without examination of ♂ aedeagus, especially of number of sclerotized teeth in orificium. Hence, these species could altogether constitute a “superspecies” or a „Rassenkreis” around most of Australia. Until more material and more information on distribution and ecology of these beetles is at hand, however, I consider it more helpful to describe them as species rather than subspecies or any other taxonomical unit.

***Microlestodes macleayi* (CSIKI, 1932), nov. comb.**

(Figs 7, 10, 15, 30, 38)

*Microlestes macleayi* CSIKI, 1932, p. 1427 (**nom. nov.** for preoccupied *Microlestes humeralis* (MACLEAY)).

*Dromius humeralis* MACLEAY, 1871, p. 88

Sloane 1910, p. 405 (*Microlestes humeralis*); 1920, p. 176 (*Microlestes humeralis*).

Type locality: Gayndah, Queensland.

Types: The holotype should be in the Australian Museum, Sydney (not seen). There are, however, several specimens available from the Sloane Collection, identified by T. G. Sloane himself. As this is by far the best known, most common, and most widely ranging species, identification is possible without considering of the type.

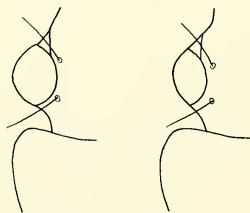
Diagnosis: Distinguished by elytral pattern, yellow antennae and palpi, piceous rather than black colour or dark areas, and aedeagus with fairly elongate, not knoblike apex.

Measurements: Length: 3.1–3.85 mm; width: 1.2–1.5 mm; ratio width/length of pronotum: 1.2–1.28; ratio widest part/base of pronotum: 1.21–1.24; ratio length/width of elytra: 1.46–1.52.

Colour (Fig. 15): Head piceous-black, pronotum dark reddish to piceous, basal third of elytra dark yellow, posteriorly widely piceous, with a common, median preapical spot, laterally to 3rd or 4th interval. Suture anteriorly mostly narrowly dark, pattern rather ill defined. Surface slightly iridescent. Mouthparts, antennae and legs dark yellow, tip of femora with a small infusate spot. Lower surface piceous, middle of abdomen, thorax, and epipleurae of elytra dirty yellow.

Head (Fig. 10): Nearly as wide as pronotum. Eyes large, laterally protruding, orbits small, rather transverse, c.  $\frac{1}{4}$  of eye length or less. Surface with very fine and dense microsculpture composed from irregular longitudinal meshes and extremely fine, scattered punctures.

Pronotum (Fig. 7): Rather narrow, heart-shaped, not much wider than head, widest at anterior lateral seta. Anterior angles produced, widely rounded. Apex excised. Lateral borders evenly convex with a distinct sinuosity in front of obtuse posterior angles. An-

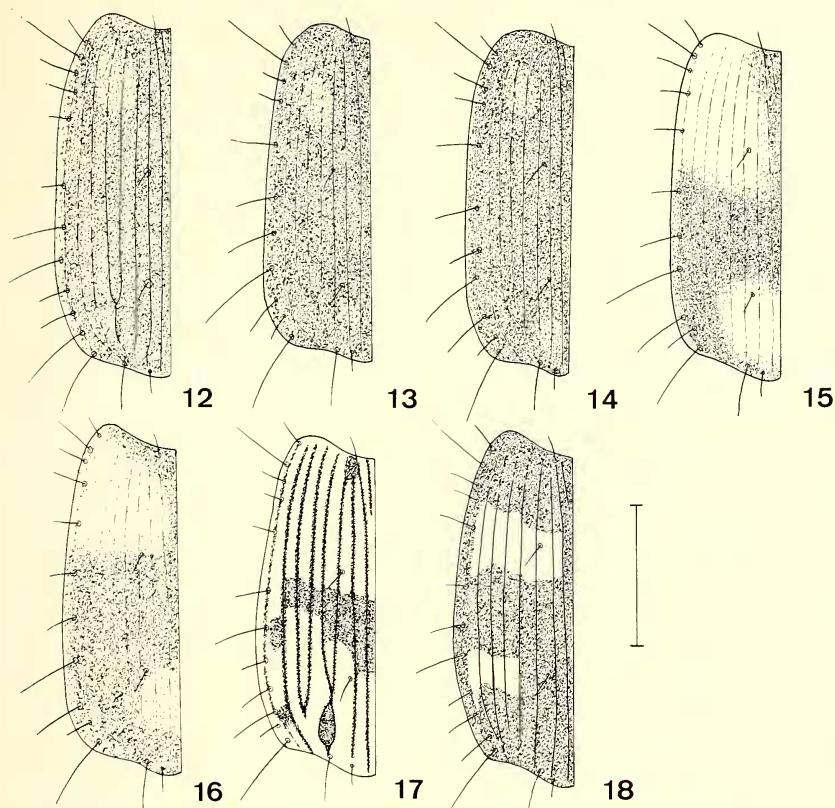


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Figs. 10–11. Eye region. 10. *Microlestodes macleayi* (CSIKI); 11. *M. pseudohumeralis* spec. nov.





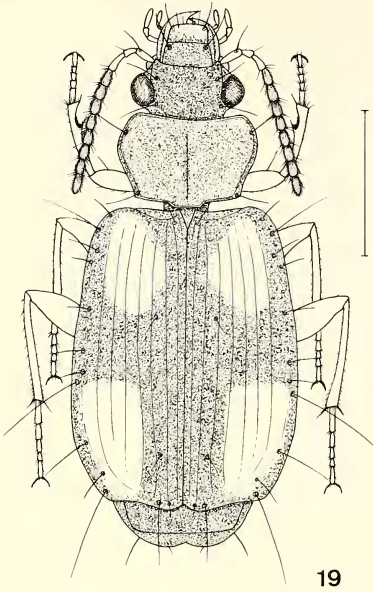
Figs. 12–18. Left elytron of some *Microlestodes* species. 12. *M. yarrae* (BLACKBURN); 13. *M. australiensis* (SLOANE); 14. *M. parallellus* spec. nov.; 15. *M. macleayi* (CSIKI); 16. *M. pseudohumeralis* spec. nov.; 17. *M. atrifasciatus* (SLOANE); 18. *M. cinctus* (DARLINGTON); scale: 1 mm.

gles, however, slightly projecting. Lateral parts of base rather transverse. Median line shortened anteriorly and posteriorly, well impressed. Lateral channel narrow, superficial. Surface with very inconspicuous, irregular microsculpture and extremely fine, scattered punctures, rather glossy.

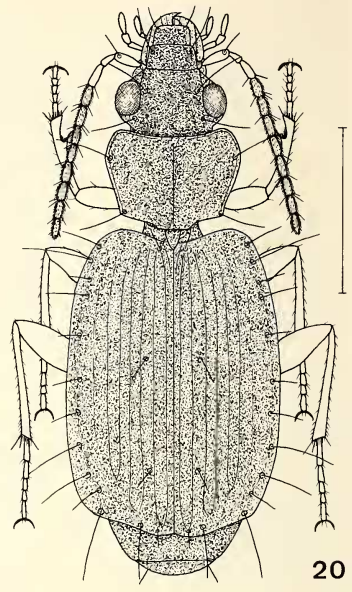
Elytra (Fig. 15): Rather elongate, but considerably widened to apex, depressed. Shoulders widely rounded, lateral border barely convex, in some specimens almost straight to widest part. Apex slightly sinuate. Striae superficial, not impressed, punctate, near apex marked only by a row of punctures. Lateral striae still less developed. Intervals depressed. Elytral pores on 3rd interval inconspicuous. Apical group of marginal pores consisting of 8 pores, humeral and apical groups not interrupted. Microsculpture very fine, irregular, consisting of fine, transverse lines. Intervals with an irregular row of extremely fine punctures. Winged.

Lower surface: Metepisterna elongate, median border almost  $2.5\times$  as long as anterior border. Last abdominal sternite in both sexes gently excised in middle, bisetose.

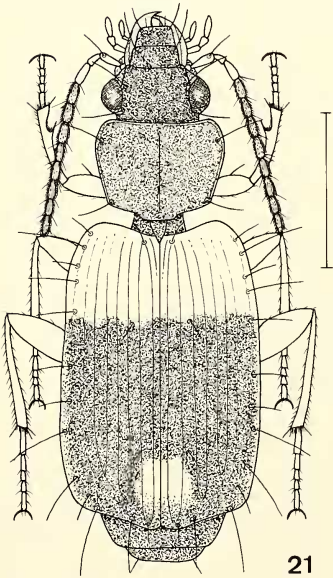




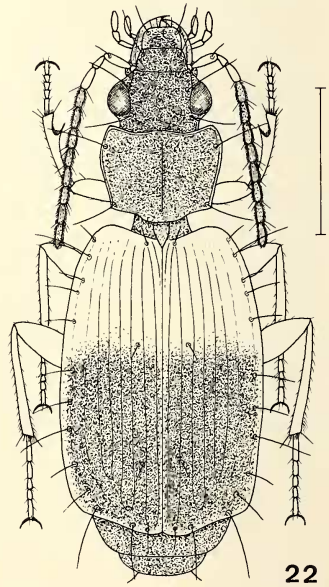
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Figs. 19–22. 19. *Mooreana quadrimaculata* spec. nov., 20. *Microlestodes flavicornis* spec. nov., 21. *Microlestodes rufoniger* spec. nov., 22. *Microlestodes inoculatus* spec. nov.; scale: 1 mm.

Legs: 1st–3rd segments of ♂ anterior tarsus slightly widened, clothed with two rows of adhesive hairs.

♂ aedeagus (Fig. 30): Rather short, with acute, slightly elongate apex. Orificium fairly large, turned to left. Orificium with at least two teeth.

Variation: Due to large number of specimens examined from nearly all of Australia some variation of size and pattern noted. Elytral pattern is in some species still less defined due to strong iridescence of surface. Colour may vary from light yellow and dark reddish to reddish and dark piceous, respectively. ♂ genitalia, however, are not much variable.

Distribution (Fig. 38): All mainland states, also in the interior, and according to SLOANE (1920) also Tasmania, but these records refer presumably to next species. I saw no specimen from Tasmania.

Material examined (433 specimens): As *M. macleayi* occurs almost everywhere in Australia, detailed specification of localities is rather useless. For localities see Fig. 38. I give only the numbers of localities for each state and the numbers of specimens:

Queensland: 17 localities, 50 specimens; New South Wales: 19 localities, 71 specimens; Australian Capital Territory: 3 localities, 3 specimens; Victoria: 25 localities, 136 specimens; South Australia: 22 localities, 55 specimens; Western Australia: 19 localities, 45 specimens; Northern Territory: 16 localities, 42 specimens; Without specification: 31 specimens.

Habits and activity period: In spite of the great number of specimens available, little is known on the habits of this species. Several specimens were caught at light, others in leaf litter. From my own experience in Queensland, South Australia, and northwestern Australia, this species is found in leaf litter on wet ground, for example near the borders of rivers and ponds. However, it is an inland species, found also in large numbers in steppe or desert areas in the interior. Hence, it is certainly not dependent on water. Captures were recorded from almost all months, the bulk of the specimens seen, however, were collected in summer months. This is certainly the most common and most widely ranging species of *Microlestodes*, occurring in almost every habitat, from rain forest to desert.

### ***Microlestodes pseudohumeralis* spec. nov.**

(Figs. 11, 16, 40)

Type locality: Tasmania.

Types: Holotype: ♂, Tasmania, Blackburn (SAM). — Paratypes: 2 ♀♀, same locality, on the same pin (CBM, SAM); 2 ♀♀, Hobart Tasmania, Lea (SAM); 1 ♀, 1 ♀, Tasmania, "*Microlestes (Dromius) humeralis* Macl. var.", H. J. Carter Coll. 20.IV.1922 (NMV); 1 ♂, Mallee, Victoria, C. French's Coll., 5.XI.1908 (NMV); 1 ♀, Grantville, Victoria (SAM); 1 ♀, Warnambool, Victoria, VI.1957, Dr. J. Owen (NMV); 1 ♂, Win-

chelsea, Vic., IX. 1957, Darlingtons (MCZ); 1 ♀, S. Austr., C. French's Coll., 5. XI. 1908 (NMV); 1 ♂, Cairns, N. Q., V. 1951, C. Oke (NMV); 2 ♀♀, Kuranda, N. Q., 21. III. 1952, C. Oke (NMV); 1 ♂, "*Dromius humeralis* Macl." (SAM).

Diagnosis: Very similar species to *M. macleayi*, distinguished by infusate antennae, palpi, and legs; darker colour; far less distinct pattern; large dark scutellar spot; and less projecting eyes with larger orbits.

Measurements: Length: 3–3.5 mm; width: 1.2–1.3 mm; ratio width/length of pronotum: 1.23–1.29; ratio widest part/base of pronotum: 1.19–1.21; ratio length/width of elytra: 1.43–1.5.

Colour (Fig. 16): Head and pronotum dark piceous to almost black, posterior two third of elytra and a large transverse spot around scutellum piceous. Shoulders and a common, median, preapical spot dirty yellow to light brown. Pattern normally ill defined, inconspicuous. Palpi and antennae brown, 1st antennal segment mostly slightly lighter. Legs dirty yellow to light brown, femora infusate.

Head (Fig. 11): Much like *M. macleayi*, but eyes smaller, laterally less protruding. Orbits larger, up to  $\frac{1}{3}$  of length of eyes, more obliquely sloping than in *M. macleayi*. Antennae elongate, median segments c.  $2\times$  as long as wide.

Pronotum: Slightly heart-shaped, more as in *M. macleayi*. Generally feebly wider and less narrowed to base than in preceding species. Posterior angles obtuse, less projecting.

Elytra (Fig. 16): Much as in *M. macleayi*, rather short, generally less than  $1.5\times$  as long as wide. Striae superficial.

♂ aedeagus: Very similar to aedeagus of *M. macleayi* (Fig. 30). Orificium with at least two sclerotized teeth.

Variation: Some variation noted in colour and distinctness of pattern. In some specimens elytral pattern extremely inconspicuous and vague, in others pattern nearly as vivid as in *M. macleayi*, but dark area of elytra always larger.

Distribution (Fig. 40): So far recorded from Tasmania, Victoria, South Australia, and northeastern Queensland.

Material examined (16 specimens): Only type series.

Habits and activity period: As most specimens are from very old collections, nothing is known on the habits of this species. It occurs perhaps in rather wet areas of the South and the Northeast, and it may be a wet country substitute of the dry country *M. macleayi*. The dull colour of elytra and appendages supports this idea. Dated specimens are from March to June, and September.

#### Note

This species is apparently closely related to *M. macleayi*. It is thus far uncertain, whether *M. pseudohumeralis* is a distinct species, a subspecies or merely an ecologically

separated form of infrasubspecific status. Distribution and some morphological characters, however, support the specific status.

***Microlestodes rufoniger* spec. nov.**

(Figs 21, 31, 39)

Type locality: Oenpelli, Northern Territory.

Types: Holotype: ♂, 12°22'S, 133°01'E, 6 km SW. by S. of Oenpelli, N. T., 30. V. 1973, at light, E. G. Matthews (ANIC). — Paratypes: 1 ♂, same locality, same date (ANIC); 1 ♀, same locality, 6. VI. 1973, Upton & Feehan (ANIC); 2 ♀♀, 12°23'S, 132°57'E, 5 km NNW. of Cahill's Crossing, East Alligator River, N. T., 28. V. 1973, E. G. Matthews (ANIC); 1 ♂, 6 ♀♀, 12°26'S, 132°58'E, Cahill's Crossing, East Alligator River, N. T., 29. V. 1973, at light, E. G. Matthews (ANIC); 1 ♀, 12°36'S, 132°52'E, Magela Creek, 1 km NNW. of Mudginbarry HS, N. T., 25. V. 1973, Matthews & Upton (ANIC); 1 ♀, 12°40'S, 132°54'E, Magela Creek, 9 km SSE. of Mudginbarry HS., 6. IX. 1972, at light, E. Britton (ANIC); 1 ♀, Magela Creek, 3 km N. of Mudginbarry, NT, 3. XI. 1984, at light, M. & B. Baehr (CBM); 1 ♂, 2 ♀♀, 12°46'S, 132°39'E, 12 km NNW. of Mt. Cahill, N. T., 25. X. 1972, at light, E. Britton (ANIC); 2 ♀♀, 12°47'S, 132°51'E, Baroalba Creek Springs, 19 km NE. by E. of Mt. Cahill, 28. X. 1972, at light, E. Britton (ANIC); 1 ♀, 12°57'S, 132°33'E, Jim Jim Creek, 19 km WSW. of Mt. Cahill, N. T., 24. X. 1972, at light, E. Britton (ANIC); 1 ♂, Fogg Dam nr. Coastal Plains Res. Stn., NT, 5. XI. 1984, at light M. & B. Baehr (CBM); 1 ♀, 2 km NW. of Windjana Gorge, 150 km E. of Derby, WA, 22. XI. 1984, at light, M. & B. Baehr (CBM); 41 ♂♂, ♀♀, Fitzroy Crossing, WA, 18.–20. XI. 1984, at light, M. & B. Baehr (ANIC, BMNH, CBM, CMC, MCZ, SAM, WAM, ZSM).

Diagnosis: Distinguished from related species by pattern very conspicuous, dark areas of surface black, pronotum wide, and aedeagus with short blunt apex.

Measurements: Length: 3.1–3.8 mm; width: 1.25–1.55 mm; ratio width/length of pronotum: 1.32–1.39; ratio widest part/base of pronotum: 1.17–1.19; ratio length/width of elytra: 1.44–1.48.

Colour (Fig. 21): Head and dark parts of elytra black, pronotum dark piceous to blackish, only faintly lighter than head. Anterior third of elytra, a preapical, common, median spot which is normally well removed from apex, and lateral channel reddish. Dark pattern well defined, slightly prolonged along suture, but not reaching base. Mouthparts, antennae, and legs yellowish-reddish. Prosternum, meso- and metathorax, and abdomen light reddish.

Head (Fig. 21): Wide, though narrower than pronotum. Eyes large, strongly protruding, orbits small, transversely oblique. Mouthparts of average size, last segments of both palpi smooth. Antennae rather elongate, median segments c. 2× as long as wide or slightly longer. Microsculpture of surface extremely fine and dense, irregular, frons with scattered fine punctures.



Pronotum (Fig. 21): Wide, especially base rather wide. Hence pronotum not heart-shaped. Anterior angles not much produced, widely rounded. Excision of apex shallow. Lateral borders evenly, but feebly convex, with a distinct prebasal sinuosity. Posterior angles obtuse. Median lobe of base wide, produced, lateral parts almost transversal, oblique only near posterior angles. Median line anteriorly complete, well impressed. Lateral channel narrow and shallow. Microsculpture of surface inconspicuous, fine, composed of very irregular transverse lines and meshes. Surface more glossy than surface of head.

Elytra (Fig. 21): Rather wide, depressed, less than  $1.5\times$  as long as wide, widest at posterior third. Shoulders widely rounded, lateral border gently convex to almost straight, apex barely sinuate. Striae superficial, not impressed, marked by a dense row of punctures, intervals depressed. All striae reaching close to apex. Lateral ones still less distinct. Microsculpture of surface very fine and dense, intervals with a row of fairly distinct punctures. Surface rather glossy. Punctures of 3rd interval inconspicuous. 8 pores in apical group of marginal pores, humeral and apical groups not interrupted. Winged.

Lower surface: Metepisternum elongate, median border at least twice as long as anterior border. Last abdominal sternite in both sexes slightly incised medially, bisetose.

Legs: 1st–3rd segments of ♂ anterior tarsus slightly widened, clothed with two rows of adhesive hairs.

♂ aedeagus (Fig. 31): Short, apex short and blunt. Orificium small, turned to left, at bottom with a sclerotized tooth.

Variation: Apart from some variation of size little variation noted.

Distribution (Fig. 39): Northernmost Northern Territory and northwestern Australia north of Great Sandy Desert.

Material examined (64 specimens): Only type series.

Habits and activity period: Habits largely unknown, most specimens captured at light. Northwestern Australian specimens collected largely near rivers. Records are available from May and June and from September to November, by far most specimens, however, collected in November. The absence of records from summer months is certainly due to the inaccessibility of the far North and Northwest from December to March.

### ***Microlestodes inoculatus spec. nov.***

(Figs 22, 32, 40)

Type locality: Fitzroy Crossing, northwestern Australia.

Types: Holotype: ♂, Fitzroy Crossing, WA, at light, 18.–20.XI.1984, M. & B. Baehr (ANIC). — Paratypes: 4 ♂♂, 9 ♀♀, same locality, same date (CBM, CMC, MCZ, ZSM); 1 ♀, 2 km W. of Windjana Gorge, 150 km E. of Derby, WA, 22.XI.1984, at light, M. & B. Baehr (CBM); 1 ♀, Ord River nr. Ivanhoe, WA, 11.–13.XI.1984, at



light, M. & B. Baehr (CBM); 1 ♀, Langi Crossing, 10 m, W. Australia, 13. X. 1962, E. S. Ross & D. Q. Cavagnaro (CAS); 4 ♂♂, 2 ♀♀, Daly River Mission, N. T., 4. VII. and 17. VIII. 1974, I. Hutchinson (ANIC); 1 ♀, 12°31'S, 132°54'E. 9 km N. by E. of Mudginbarry HS, NT, 26. V. 1973, at light, Upton & Mc Inns (ANIC).

Diagnosis: Characterized by dark and yellow pattern of elytra without light preapical spot, and by aedeagus with short, knoblike apex.

Measurements: Length: 3–3.6 mm; width: 1.2–1.45 mm; ratio width/length of pronotum: 1.28–1.32; ratio widest part/base of pronotum: 1.16–1.21; ratio length/width of elytra: 1.42–1.45.

Colour (Fig. 22): Head dark piceous, pronotum lighter brownish, dark parts of elytra piceous. Anterior third of elytra, lateral channel, and suture dirty yellow to light brown, posterior part dark. Pattern very ill defined. Surface rather iridescent. Mouthparts, antennae, and legs dirty yellow. Lower surface light brown.

Head (Fig. 22): Nearly as wide as pronotum. Eyes very large, though moderately protruding. Orbits short, oblique. Mouthparts of average size, terminal segments of both palpi smooth. Antennae rather elongate, median segments c. twice as long as wide. Surface with very dense and fine, irregular microsculpture and fine, scattered punctures.

Pronotum (Fig. 22): Wide, depressed, widest at anterior lateral seta, base wide. Anterior angles moderately produced, widely rounded. Excision of apex moderate, slightly bisinuate. Lateral borders moderately convex, distinctly sinuate in front of the obtuse posterior angles. Median lobe of base wide, produced, lateral parts almost transverse. Median line nearly complete, well impressed. Lateral channel narrow. Microsculpture of surface very fine, superficial, irregular. Surface with fine, scattered punctures.

Elytra (Fig. 22): Rather wide, strongly depressed, widest in last third. Shoulders widely rounded, lateral border slightly convex to almost straight, apex barely sinuate. Striae feebly impressed, complete, densely punctate. Intervals near base feebly convex, then depressed. Lateral striae not much weaker than dorsal ones. Microsculpture superficial, though distinct, consisting of very irregular transverse meshes and lines. Intervals with a row of fine punctures. Surface strongly iridescent. Pores on 3rd interval inconspicuous. 8 pores in apical group of marginal pores. Humeral and apical groups not interrupted. Lateral channel rather wide. Winged.

Lower surface: Metepisternum elongate, median border c. twice as long as anterior border. Last abdominal sternite in both sexes medially slightly excised, bisetose.

Legs: 1st–3rd segments of ♂ anterior tarsus slightly widened, clothed with two rows of adhesive hairs.

♂ aedeagus (Fig. 32): Short, with short, knob-like apex. Orificium rather large, turned to left, lower border strongly sclerotized. At bottom apparently without teeth.

Variation: Rather variable in size and extension of dark elytral pattern. The anterior border of dark area may be extremely ill defined. In other respects little variation noted.

Distribution (Fig. 40): Extreme northern parts of Northern Territory and north-western Australia north of Great Sandy Desert.

Material examined (24 specimens): Only type series.

Habits and activity period: Habits largely unknown, most specimens collected at light near rivers with standing or running water. Collecting records available from May, July, August, October, and November, the bulk of specimens, however, from November. This species is certainly also a wet season form, but records from summer months lack due to the inaccessibility of the region where it occurs.

***Microlestodes atrifasciatus* (SLOANE, 1910), nov. comb.**

(Figs 8, 17, 33, 39)

*Microlestes atrifasciatus* SLOANE, 1910, p. 404, 405

Csiki 1932, p. 1427 (*Microlestes*)

Darlington 1968, p. 136

Type locality: Kuranda, North Queensland.

Types: I examined three specimens, all slightly to rather destroyed, mounted on the same card, and labelled "Syntype" (printed label) and "Prob. Types of *Microlestes atrifasciatus* Sl. P. J. D.", written by Darlington (ANIC). They also bear a printed label "Kuranda, Queensland" and the card has a note "63 n. sp.", written by Sloane. Perhaps no other specimens are available which could serve as types. Because the card was labelled by Sloane himself, I also think the specimens reasonably types and I designate the least destroyed specimen the lectotype, the two others paralectotypes. This designation is noted on the label.

Diagnosis: Easily distinguished from most other species by pattern and by narrow, elongate aedeagus with extremely elongate apex, additionally from next related species by elytral vitta distinctly v-shaped and pronotum perceptibly sinuate in front of posterior angles.

Measurements: Length: 3.25–3.9 mm; width: 1.4–1.7 mm; ratio width/length of pronotum: 1.3–1.37; ratio widest part/base of pronotum: 1.2–1.21; ratio length/width of elytra: 1.38–1.42.

Colour (Fig. 17): Head and pronotum dark piceous with strong metallic lustre, head just slightly darker than pronotum. Elytra light yellow, a v-shaped vitta of slightly variable shape in posterior half of elytra, a small spot on each side of scutellum, and two spots on 4th and 7th intervals near apex piceous to black. Elytral vitta outside of 6th interval slightly to strongly extended posteriorly. Sometimes a spot on 8th interval separated from main part of vitta. Other dark spots rather variable in extension and intensity. Elytral striae conspicuously striped with light brown. Mouthparts and antennae yellow, median and apical segments of antennae slightly darker. Legs yellow, apex of tibiae and tarsus light brown. Lower surface piceous.

Head: Much narrower than pronotum. Eyes large, rather protruding, orbits short, oblique, but not convex. Mouthparts rather elongate, apical segments of both palpi smooth. Antennae medium-sized, median segments barely twice as long as wide. Surface conspicuously microreticulate with isodiametric meshes.

Pronotum (Fig. 8): Much wider than head, widest at anterior lateral seta. Apex gently sinuate, anterior angles slightly produced, widely rounded. Lateral border evenly convex, slightly sinuate in front of obtuse posterior angles. Base rather wide, median lobe produced, lateral parts oblique. Median line complete, rather conspicuous. Lateral channel deep. Microsculpture of surface conspicuous, consisting of slightly transverse meshes.

Elytra (Fig. 17): Short and wide, slightly widened to apex. Depressed. Shoulders widely rounded, lateral borders gently convex, apex barely sinuate. Striae rather impressed, punctate. Intervals slightly convex. 3rd and 4th striae united in last fourth, again separated just in front of apex to build a cell including the apical dark spot. 5th and 6th striae uniting and ending far before apex. Punctures of 3rd interval conspicuous, not grooved. Apical group of marginal pores consisting of 9 pores, humeral and apical groups not interrupted. Surface with strong, rather isodiametric microsculpture. Intervals with an irregular row of extremely fine punctures. Winged.

Lower surface: Metepisternum very elongate, median border at least  $2.5\times$  as long as anterior border. Last abdominal sternite in both sexes slightly excised medially, bisetose.

Legs: 1st–3rd segments of ♂ anterior tarsus slightly widened, clothed with two rows of adhesive hairs.

♂ aedeagus (Fig. 33): Narrow and elongate with very elongate and delicate apex. Orificium large, strongly turned to left, without sclerotized teeth.

Variation: Some variation of size and pattern noted, otherwise little variation.

Distribution (Fig. 39): Queensland, ? northern New South Wales. There is a single specimen from the Darlington Coll. (MCZ), labelled Lismore, NSW, which is evidently a *M. atrifasciatus*. This would mean the single record south of  $20^{\circ}\text{S}$ , more than 1 000 km away from most southern record in Queensland.

Material examined (60 specimens):

Queensland: 11 ♂♂, ♀♀, Shiptons flat,  $15^{\circ}47'\text{S}$ ,  $145^{\circ}14'\text{E}$ , 17.–19. X. 1980, T. Weir (ANIC, CBM); 1 ♀,  $15^{\circ}16'\text{S}$ ,  $144^{\circ}59'\text{E}$ , 15 km W. by N. of Hope Vale Missiom, 8.–10. X. 1980, T. Weir (ANIC); 1 ♀,  $15^{\circ}47'\text{S}$ ,  $145^{\circ}17'\text{E}$ , Moses Cr., 4 km N. by E. of Mt. Finnigan, 14.–16. X. 1980, T. Weir (ANIC); 2 ♂♂, 1?, Kuranda, lectotype!, paralectotypes! (ANIC); 1 ♂, Black Mt. Road, Kuranda, 2. XII. 1967, J. G. Brooks (CMC); 1 ♂, 1 ♀, Cairns, XII. 1970, J. G. Brooks (ANIC); 1 ♂, 3 km N. of Atherton, 5. V. 1970, J. G. Brooks (ANIC); 16 ♂♂, ♀♀, Atherton, XII. 1957–II. 1958, Darlington (CBM, MCZ); 1 ♂, 3 ♀♀, Barrine Nat. Pk., 21. III. 1975, R. W. Taylor (ANIC); 1 ♀, Eacham Nat. Pk., 16. II. 1973, J. G. Brooks (ANIC); 1 ♂, 3 ♀♀, same locality, 23. III. 1975, R. Q. Taylor (ANIC); 1 ♂, 12 km SSW. of Herberton, The Crater N. P., 25. I. 1972,

J. G. Brooks (ANIC); 1 ♀, Green Hills, 19. XII. 1967, J. G. Brooks (ANIC); 1 ♂, Bingil Bay, 17°50' S, 146°06' E, 25. VIII. 1977, M. S. Upton (ANIC); 3 ♂♂, 8 ♀♀, Boar Pk. Road, 8 km N. of Gillies Hwy., 26. XII. 1969, J. G. Brooks (ANIC, CMC).

New South Wales: 1 ♂, Lismore, IV. 1958, Darlings (MCZ).

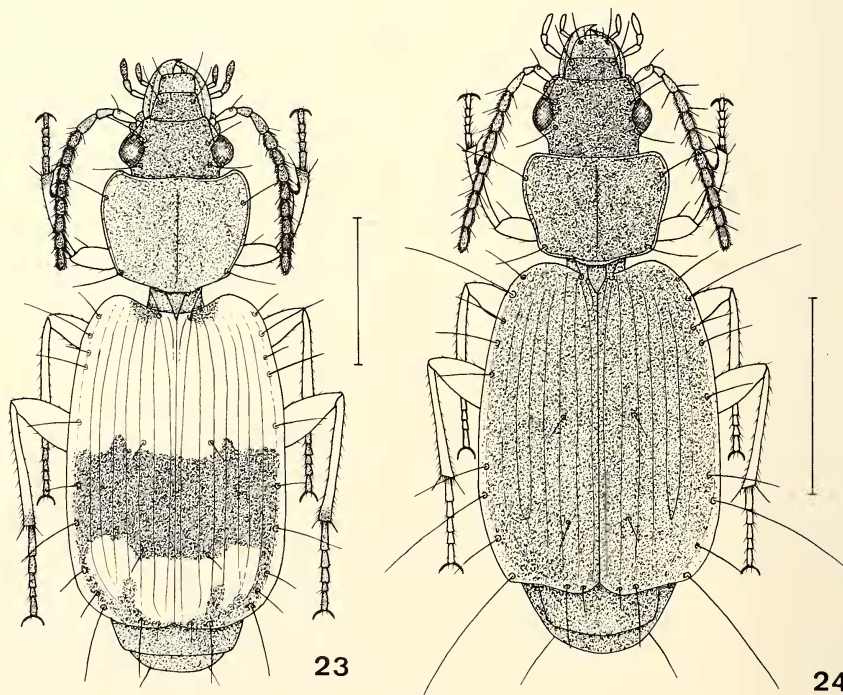
Habits and activity period: Nothing is actually known on the habits of this species. Single specimens have been collected at light and in leaf litter. Records are available from December to May and from August to October, though by far most specimens were collected in summer.

***Microlestodes zonatus* spec. nov.**

(Figs 4, 23, 34, 39)

Type locality: Wilsons Promontory, Victoria.

Types: Holotype: ♀, Wilsons Promontory N. P., Lilly Pilly Tr., Vic., 14. V. 1978, S. & J. Peck (ANIC). — Paratypes: 1 ♀, Mt. Gingera, NSW., 15. II. 1969, S. Misko (ANIC); 3 ♂♂, 5 ♀♀, "Calosoma", via Gunderoo, NSW, 6. VII. 1977, 4. VI. 1978, 8. VII. 1978, B. P. Moore, Forest litter Berlese extract (CBM, CMC).

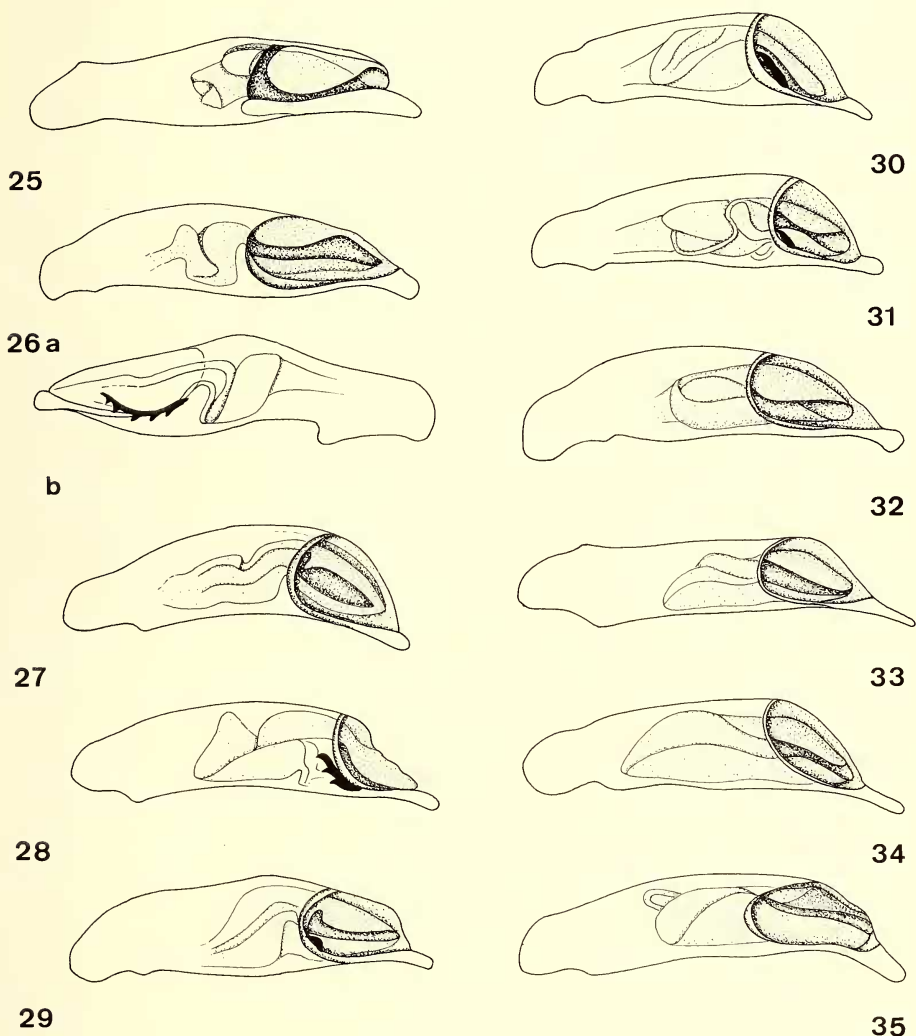


Figs. 23–24. 23. *Microlestodes zonatus* spec. nov.; 24. *M. ovatus* spec. nov.; scale: 1 mm.



Diagnosis: At once distinguished by pattern and from next related species by elytral vitta not v-shaped and pronotum not perceptibly sinuate in front of posterior angles.

Measurements: Length: 3.7–4.1 mm; width: 1.5–1.65 mm; ratio width/length of pronotum: 1.31–1.35; ratio widest part/base of pronotum: 1.2–1.24; ratio length/width of elytra: 1.45–1.5.



Figs. 25–35. ♂ aedeagi of species of *Mooreana* and *Microlestodes*. 25. *Mooreana quadrimaculata* spec. nov.; 26. *Microlestodes yarrae* (BLACKBURN); 27. *M. australiensis* (SLOANE); 28. *M. parallelus* spec. nov.; 29. *M. flavicornis* spec. nov.; 30. *M. macleayi* (CSIKI); 31. *M. rufoniger* spec. nov.; 32. *M. inoculatus* spec. nov.; 33. *M. atrifasciatus* (SLOANE); 34. *M. zonatus* spec. nov.; 35. *M. ovatus* spec. nov. All from left side, 26b seen from right side.

Colour (Fig. 23): Head and pronotum dark piceous to blackish, slightly iridescent (in holotype reddish-brown). Elytra yellow, a rather wide, transverse vitta in posterior half black, lateral and apical borders and a spot near scutellum vaguely dark. Striae not darkened. Mouthparts dark yellow, 1st and 2nd segments of antennae yellow, 3rd segment piceous, following segments light brown. Legs yellow, apex of tibiae and tarsi infusate. Lower surface piceous, posterior border of last abdominal sternite yellow.

Head (Figs 4, 23): Slightly narrower than pronotum. Eyes large, but not much protruding. Orbits rather small, oblique. Palpi rather elongate, last segments smooth. Antennae short and stout, median segments c.  $1.3\times$  as long as wide. Surface distinctly microreticulate, meshes isodiametric.

Pronotum (Fig. 23): Wider than head, at base rather narrow, widest at anterior lateral seta. Anterior angles produced, widely rounded. Apex deeply excised. Lateral borders anteriorly to apex strongly rounded, behind anterior seta to base less convex. Without sinuosity in front of very obtuse posterior angles. Median lobe of base strongly produced, lateral parts rather oblique. Median line anteriorly and posteriorly shortened, in middle well impressed. Lateral channel shallow. Microsculpture of surface moderate, consisting of slightly transverse meshes.

Elytra (Fig. 23): Depressed, rather wide, widest in posterior third. Shoulders rounded, lateral border slightly convex throughout. Apex without any sinuosity, even slightly convex. Striae superficial, not perceptibly impressed, marked by fine punctures. Intervals depressed. 3rd and 4th, and 5th and 6th striae, respectively, united just a short distance before apex, 3rd and 4th not separated again. Dorsal punctures inconspicuous. Apical group of marginal pores consisting of 7, rarely 8 pores on one side. Humeral and apical groups not interrupted. Microsculpture of surface strongly reduced, inconspicuous, consisting of very fine, irregular transverse meshes, surface almost smooth, rather glossy. Winged.

Lower surface: Metepisternum moderately elongate, median border c.  $1.5\times$  as long as anterior border. Last abdominal sternite in both sexes feebly excised medially, bisetose.

Legs: 1st–3rd segments of ♂ anterior tarsus slightly widened, clothed with two rows of adhesive hairs.

♂ aedeagus (Fig. 34): Moderately elongate, dorsally slightly convex, with elongate apex. Orificium turned to left, without sclerotized teeth.

Variation: Little variation noted.

Distribution (Fig. 39): Southern New South Wales, southeastern Victoria.

Material examined (10 specimens): Only type series.

Habits and activity period: Habits not well known, some specimens collected in leaf litter of Eucalypt forest. So far captured in February and from May to July.

***Microlestodes cinctus* (DARLINGTON, 1968), nov. comb.**  
(Figs 9, 18, 39)

*Microlestes cinctus* DARLINGTON, 1968, p. 136

Type locality: Feramin, Papua New Guinea.

Types: Holotype (seen): ♂, New Guinea, NE., Feramin, 150–120 m, 11.–22. V. 1959, W. W. Brandt (BMH).

Diagnosis: Easily distinguished from all other species of *Microlestodes* by pattern.

Darlington (1968) gives a good description of this species and he compares it with *M. atrifasciatus* (Sloane) from North Queensland. Indeed, *M. cinctus* seems most closely related to *M. atrifasciatus* and *M. zonatus*, as the ♂ aedeagus has the same elongate apex,

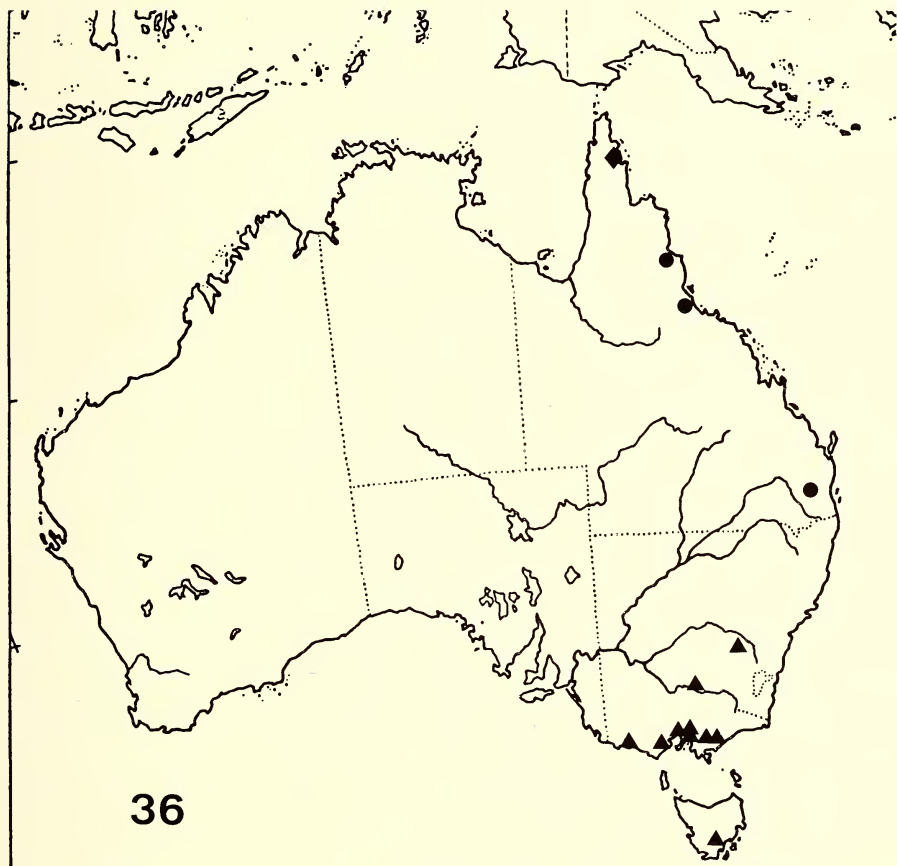


Fig. 36. Distribution of *Syntomus quadripunctatus* (SCHMIDT-GÖBEL) in Australia: ●; of *Mooreana quadrimaculata* spec. nov.: ◆; and of *Microlestodes yarrae* (BLACKBURN): ▲.

the microsculpture is also very distinct, and the pronotum is laterally evenly rounded, without sinuosity in front of posterior angles.

Distribution (Fig. 39): Known from two localities in Papua New Guinea. Not yet recorded from Australia.

Material examined (1 specimen): Holotype.

#### Note

The three last species *M. atrifasciatus*, *M. zonatus*, and *M. cinctus* are a conspicuous, separate group within genus *Microlestodes*, not closely related to any of the other species.

### **Cyclolestodes subgen. nov.**

Type species: *Microlestodes ovatus* spec. nov.

Diagnosis: Much alike *Microlestodes* s. str., but elytra ovoid, convex; metepisterna short, quadrate; wings absent; humeral and apical groups of marginal pores separated by an interspace; and apical group consisting of 6 pores only, the two anterior groups of two pores each well separated. Tactile setae of elytra conspicuously elongate.

### **Microlestodes ovatus spec. nov.**

(Figs 24, 35, 40)

Type locality: Black Mountain, Australian Capital Territory.

Types: Holotype: ♂, Black Mt. W. face, 620 m, A. C. T., 8.VII. 1970, J. Simmons (ANIC). — Paratypes: 65 ♂♂, ♀♀, Black Mt., A.C.T., 29.IX. 1967, 19.XI. 1967, 31.V. 1968, 4.XII. 1969, 23.I. 1970, 30.I. 1970, 27.II. 1970, 26.V. 1970, 2.VI. 1970, 3.VI. 1970, 17.VI. 1970, 23.VI. 1970, 8.VII. 1970, collectors: C. G. Brooks, C. Kirkby, C. A. Mould, J. Simmons, I. C. Taplin, R. W. Taylor (ANIC, CBM); 18 ♂♂, ♀♀, Mt. Ainslie, A. C. T., 9.I. 1968, 27.XI. 1969, 11.VIII. 1970, C. G. Brooks, C. Taplin (ANIC); 2 ♀♀, Black Mt., A. C. T., 21.X. 1976, B. P. Moore (CMC); 1 ♀, New England Nat. Pk., c. 4700', NSW, 2.II. 1968, R. W. Taylor (ANIC); 1 ♀, Q'beyan, Mt. Jarrabombera, NSW, 750 m, 14.XII. 1969, I. C. Taplin (ANIC); 4 ♀♀, Federal Hwy, NSW, 28.X. 1962, 29.III. 1964, B. P. Moore (CMC); 1 ♀, Kangaroo Vy, NSW, 7.IX. 1963, B. P. Moore (CMC); 5 ♀♀, "Calosoma" via Gundaroo, NSW, 6.IV. 1969, 5.VI. 1977, 8.VII. 1978, B. P. Moore (CMC); 6 ♂♂, ♀♀, Chiltern For. Victoria, II. 1967, R. S. McInnes (ANIC); 2 ♂♂, 1 ♀, Beachworth, Vic., VI. 1942, C. Oke (NMV).

Diagnosis: Easily distinguished by convex, ovoid body shape and short, quadrate metepisterna.

Measurements: Length: 2.4–3 mm; width: 1.15–1.35 mm; ratio width/length of pronotum: 1.32–1.42; ratio widest part/base of pronotum: 1.16–1.2; ratio length/width of elytra: 1.28–1.35.



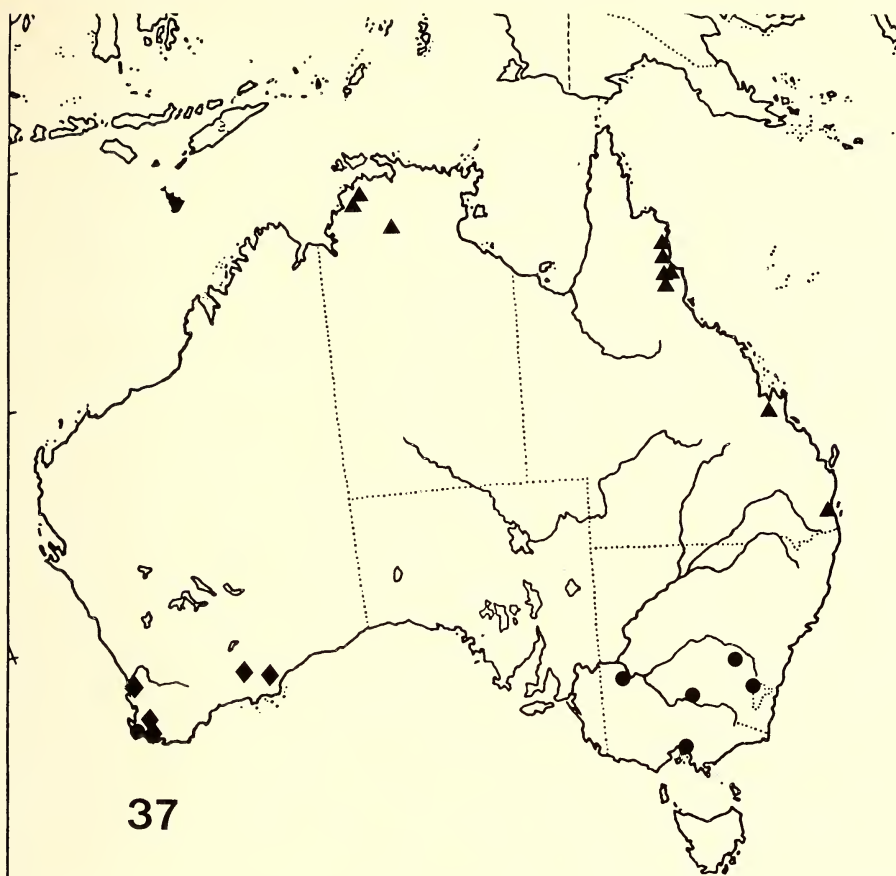


Fig. 37. Distribution of *Microlestodes australiensis* (SLOANE): ●; of *M. parallelus* spec. nov.: ◆; and of *M. flavicornis* spec. nov.: ▲.

Colour: Piceous, head feebly darker. Surface rather glossy. Antennae and mouth-parts yellow to light reddish, legs whitish. Lower surface piceous.

Head (Fig. 24): Narrow, elongate, narrower than pronotum. Eyes large, moderately protruding, far removed from apex of pronotum. Orbits moderate, oblique. Terminal segments of labial palpi short and thick, terminal segments of both palpi with extremely fine, scattered pilosity. Antennae moderate, median segments c.  $1\frac{3}{4}\times$  as long as wide. Microsculpture of surface very fine with rather irregular transverse meshes which turn to longitudinal direction near eyes, and extremely fine, scattered punctures.

Pronotum (Fig. 24): Wide, slightly convex, much wider than head, widest far anteriorly of anterior lateral seta. Apex moderately excised. Lateral borders strongly convex from anterior seta to anterior angles. Posteriorly lateral border almost straight to slightly



Fig. 38. Distribution of *Microlestodes macleayi* (CSIKI).

convex. In some specimens only a feebly sinuosity present in front of obtuse posterior angles. Median lobe not much produced, not distinctly separated from rather oblique lateral parts of base. Median line shortened anteriorly and posteriorly, in middle, however, distinct and well impressed. Lateral channel narrow, but rather deep, conspicuous. Microsculpture of surface superficial, irregularly transverse. Surface rather glossy.

Elytra (Fig. 24): Short, wide, ovoid, fairly convex. Shoulders obliquely rounded, lateral border strongly convex throughout, elytra widest in last third. Apex barely excised, slightly oblique. Striae superficial, not impressed, inconspicuously punctate. Lateral striae even less distinct. Intervals depressed. Microsculpture superficial, inconspicuous, consisting of very fine transverse lines. Intervals with extremely fine, scattered punctures. Surface strongly iridescent. Punctures on 3rd interval inconspicuous. Humeral and apical groups of marginal pores interrupted by an interspace 1.5–2× as wide as space between the two posterior pores of the humeral group. Apical group consisting of 6 pores

only, the anterior two groups of two pores each well separated. Lateral setae remarkably elongate.

Lower surface: Metepisternum short, quadrate. Last abdominal sternite in both sexes slightly excised medially, bisetose.

Legs: All legs rather short. 1st–3rd segments of ♂ anterior tarsus feebly dilated, clothed with two rows of adhesive hairs.

♂ aedeagus (Fig. 35): Elongate, narrow, apex rather elongate, conspicuously bent down. Orificium elongate, turned to left. Inner sac without sclerotized teeth, rather simply folded.

Variation: Considerable variation of size noted. Small specimens tend to possess narrower, more heart-shaped pronotum with perceptibly sinuate lateral border, and even more convex elytra.

Distribution (Fig. 40): Eastern New South Wales from New England National Park southwards, A. C. T., and eastern Victoria.

Material examined (107 specimens): Only type series.

Habits and activity period: Habits little known. This is presumably a montane species living in leaf litter of mountain forests, especially of Dry Sclerophyll Forest in median altitudes, as many specimens are from Berlese samples. Single specimens also from Eucalypt-Nothofagus Forest, especially in the northernmost part of the range. Records are available from almost all months.

#### Note

This species is certainly well isolated from all other *Microlestodes*. But it might be an early offshoot of the *M. australiensis-parallelus-flavicornis*-group with several special adaptations due to its specialized habits of a mountain forest litter species.

## Discussion

### Relationships of the Australian Dromiini

Apparently three genera of Dromiini live in Australia: *Syntomus* (*Metabletus*), *Mooreana*, and *Microlestodes*. *Microlestes*, however, reaches perhaps only New Guinea. Because the Dromiine fauna of the neighbouring countries is certainly not well known – in spite of Darlington's work on New Guinea (1968), Micronesia (1970), and Jedlickas (1963) review of the South-east-Asian fauna – establishment of the real phylogenetical relations of the Australian fauna is difficult. Only in *Syntomus* and *Microlestes* the rather recent oriental origin of the single species, respectively, is not doubtful. Relationships of *Mooreana* and *Microlestodes*, however, are rather obscure. The single species of *Mooreana* shows some striking similarities in shape and pattern with certain Oriental *Syntomus* (see f. e. JEDLIČKA 1963) and indeed, *Mooreana* seems to come close to *Syntomus* by virtue

of the presence of a mental tooth, of mental setae and of additional apical setae on the glossa. The single species is endemic to a small patch of rainforest in mid Cape York Peninsula, where some other spectacular Carabid species of obscure relationships occur (MOORE 1975, BAEHR in press).

*Microlestodes* is a rather diverse genus; some species resemble strongly true *Microlestes* species, others are superficially more like certain *Syntomus*. The genus as a whole, however, is more related to *Microlestes* than to *Syntomus* or any other Dromiine genus occurring in the neighbourhood.

Within *Microlestodes* several clear-cut species groups can be sorted out: 1. The *atri-fasciatus-zonatus-cinctus*-group; 2. the *macleayi-pseudohumeralis-rufoniger-inoculatus*-group; 3. the *australiensis-parallelus-flavicornis*-group; 4. the *yarrae*-group; and 5. the *ovatus*-group. An attempt is made to show the supposed relations of the groups and species in a cladistic approach (Fig. 41). This diagram, however, is highly arbitrary, as several character states supposed to be apomorphic could also be looked upon as plesiomorphic, because no phylogenetical analysis of the whole tribe Dromiini is available. Therefore few phylogenetical trends within this tribe are known. In the following list of supposed apomorphic character states small letters beside numbers indicate convergently evolved apomorphic states of a character. In some characters the state is highly doubtful. In some cases no obvious apomorphic state has been found, such incertain dichotomies are indicated by dotted lines.

1. Glossa with additional median setae.
2. Lateral pores of apical marginal pores of elytra condensed to two separate groups of three pores each.
3. Mentum without tooth.
4. Tooth of mentum bidentate.
5. Paraglossae completely surrounding glossa and apically fused together.
6. Mentum basally without setae.
7. Antennae pilose from 4th segment.
8. Elytra with conspicuous pattern of light or dark transverse vittae or spots.
9. Elytra strongly depressed.
10. With tendency to enlargement of body.
11. Number of apical marginal pores of elytra reduced or increased from original 8.
12. Apex of ♂ aedeagus strongly elongated.
13. Striation of elytra reduced, striae superficial. States a and b convergent.
14. Microsculpture of elytra reduced.
15. Number of apical marginal pores of elytra reduced to 7.
16. Number of apical marginal pores of elytra increased to 9. States a and b certainly convergent.
17. Pronotum extremely widened.
18. 3rd and 4th striae united near apex to form a small, ovalish cell.
19. Elytral striae striped with brown.



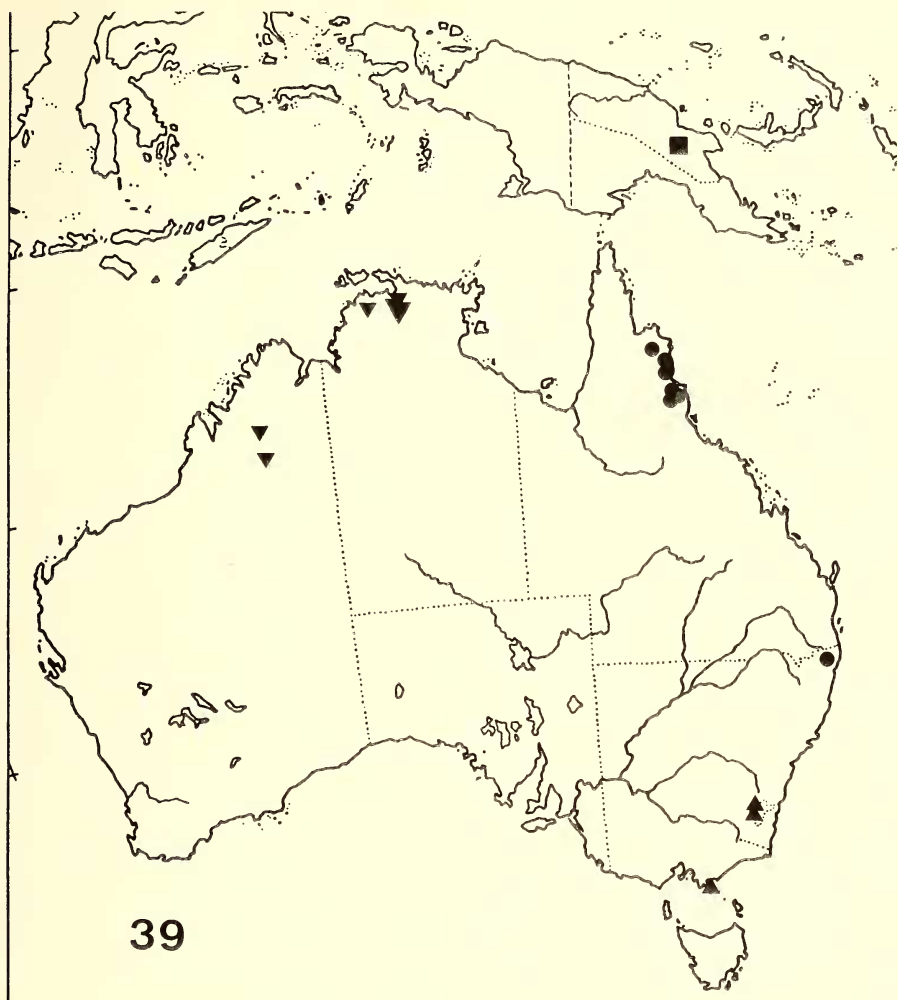
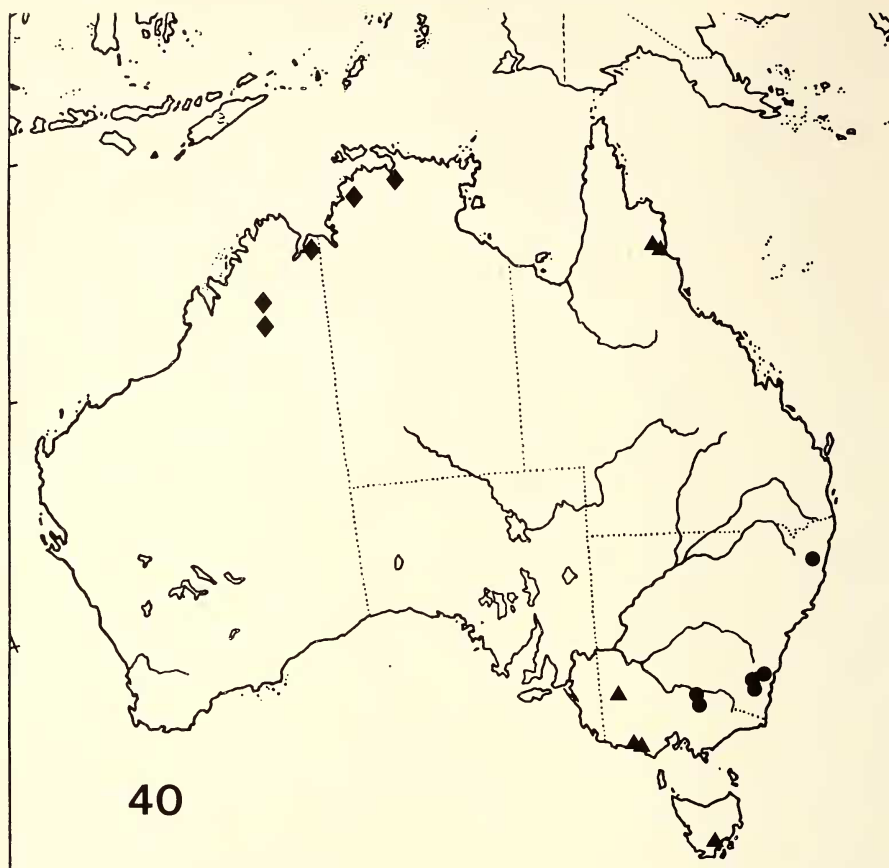


Fig. 39. Distribution of *Microlestodes rufoniger* spec. nov.: ▼; of *M. atrifasciatus* (SLOANE): ●; of *M. zonatus* spec. nov.: ▲; and of *M. cinctus* (DARLINGTON): ■.

20. Pattern reduced, indistinct.
21. Elytra without common preapical spot.
22. ♂ aedeagus with distinct apical knob.
23. ♂ aedeagus with at least two teeth in orificium.
24. Pattern extremely well limited, colour deeply black.
25. Apex of ♂ aedeagus shortened, indistinctly knob-like.
26. Eyes very large.
27. Pattern inconspicuous, colour altogether dull.
28. Antennae, palpi, and legs infuscate.



40

Fig. 40. Distribution of *Microlestodes pseudohumeralis* spec. nov.: ▲; of *M. inoculatus* spec. nov.: ◆; and of *M. ovatus* spec. nov.: ●.

29. Pattern completely reduced.
30. ♂ aedeagus with sinuate dorsal and ventral surfaces.
31. ♂ aedeagus with a tooth in orificium.
32. Antennae and palpi infuscate.
33. Apex of ♂ aedeagus elongate.
34. ♂ aedeagus with two teeth in orificium.
35. Posterior wings atrophied. States a and b convergent.
36. Metepisternum shortened. 36 b is a even more apomorphic state, presumably of convergent origin.
37. Shoulders obliquely rounded off. States a and b convergent.
38. Surface strongly iridescent. States a and b convergent.
39. Dorsal punctures of elytra impressed.
40. ♂ aedeagus with sclerotized bar in orificium, armoured with several teeth.

41. Orificium of ♂ aedeagus strongly excised, latero-ventrally with explanate rim.
42. Body oval and convex.
43. Eyes depressed, orbits large.
44. Humeral and apical groups or marginal elytral pores well separated.
45. Apical group of marginal elytral pores reduced to 6, two anterior groups of pores well separated.
46. Marginal setae of elytra very elongate.

The *atrifasciatus*-group is separated from the main body of the genus by pattern, body shape, structure of elytral striation and microsculpture, and shape of ♂ aedeagus. The three species are certainly closely related. The group combines rather primitive with several derivative character states.

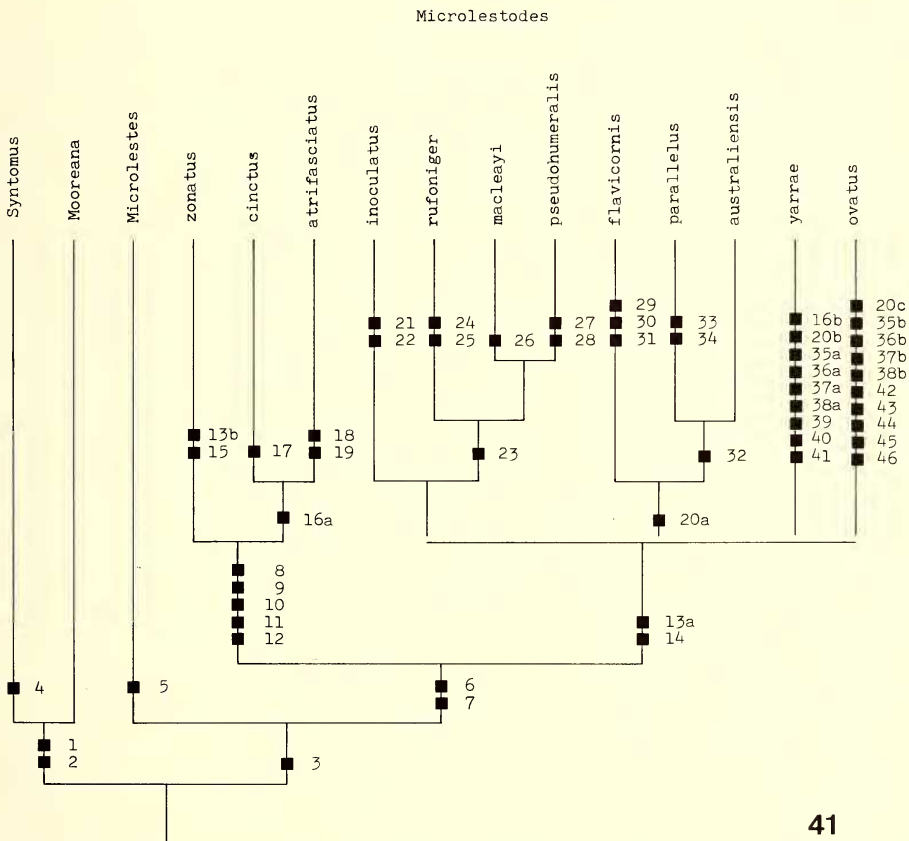


Fig. 41. Preliminary diagram of the supposed phylogenetical relationships of the Australian genera and species of Dromiini. For explanation of character state numbers see text. States a and b of convergent origin.

Most other species groups are perhaps more closely related than to the *atrifasciatus*-group. Especially the *macleayi*- and *australiensis*-groups are not well separated, and actually it is rather difficult to distinguish the more generalized species of either groups. Both groups and also *M. yarrae* possess a more or less distinct basic elytral pattern, with at least a lighter spot behind shoulders and traces of a common preapical spot. This basic pattern is in different ways reduced or varied, but almost all species possess to some degree remnants of it.

The *macleayi*-group represents perhaps the most generalized *Microlestodes*, with *M. macleayi* being perhaps the most generalized species.

The *australiensis*-group is certainly closely related to the *macleayi*-group. By virtue of the simple ♂ aedeagus and the still perceptible pattern *M. australiensis* seems to be most generalized. *M. parallelus*, which is very closely related to *M. australiensis* and which can be distinguished without difficulty only in the ♂ sex, and *M. flavicornis* seem slightly more advanced.

*M. yarrae* and perhaps also *M. ovatus* are presumably early offshoots of the *australiensis*-group. Both species show some highly apomorphic character states presumably depending on reduction of wings due to the life in the leaf litter of (mountain) forests. But these trends are most likely convergently evolved in *M. yarrae* and *M. ovatus* and do not point to close relationship of both species. Certainly *M. ovatus* is by far the most derived species of the whole genus.

### Distribution

Distribution of the Australian Dromiine fauna is certainly not fully known, because extensive areas, especially in the far North and the West are unsatisfactorily collected, and new collecting methods – for example the use of light traps or Berlese sampling – may reveal a considerable enlargement of the range of species as well as the discovery of even new species. Almost all numerous specimens of *M. ovatus*, for example, were collected by Berlese extraction of leaf litter in Eucalypt forest, where this new species seems to be rather common. The ranges of species are therefore not definitive and should considered with some caution.

In almost all parts of Australia at least one *Microlestodes*-species (*M. macleayi*) occurs. The single exception is perhaps the Cape York Peninsula, from where so far no record was available. But this does not preclude the discovery of a *Microlestodes* species, when this large area is better explored. The ranges of *Mooreana* and *Syntomus* in Australia are more restricted. *Mooreana* occurs only in the small Rocky River area in the middle of the Cape York Peninsula. The single Australian *Syntomus* is distributed in eastern Queensland.

The distribution pattern of the *Microlestodes* species is rather disproportionate (see Tab. and Fig. 42). Eastern Queensland has apparently the most numerous and diverse



Table 3. Distribution of genera, species groups, and species in the natural zoogeographical regions of Australia. NG: New Guinea; NE: northeastern Australia; SE: southeastern Australia; Tas: Tasmania; SW: southwestern Australia; W: Western Australia south of Great Sandy Desert, north of about Geraldton; NW: northwestern Australia (north of Great Sandy Desert); NT: tropical part of Northern Territory; C: Central Australia, dry parts of all states.

State	genera	groups	species
NG	<i>Microlestes</i> , <i>Sytomus</i> , <i>Microlestodes</i>	3	3
NE	<i>Mooreana</i> , <i>Syntomus</i> , <i>Microlestodes</i>	5	6
SE	<i>Microlestodes</i>	5	5
Tas	<i>Microlestodes</i>	2	2
SW	<i>Microlestodes</i>	2	3
W	<i>Microlestodes</i>	1	1
NW	<i>Microlestodes</i>	1	3
NT	<i>Microlestodes</i>	2	4
C	<i>Microlestodes</i>	1	1

fauna on the whole, followed by southeastern Australia, where, however, still more *Microlestodes* species exist. Northern and northwestern Australia and the southwestern corner of Western Australia possess several species, but the group diversity is very low. Central and western Australia, on the other hand, is extremely poor in species. The distribution of species groups of *Microlestodes* is therefore quite different:

The *atrifasciatus*-group is completely restricted to eastern Australia and New Guinea.

The most generalized species of the *macleayi*-group is distributed over whole mainland Australia, more derivative species live in humid regions of northeastern Queensland and in the far South, or in the far North and Northwest.

The *australiensis*-group occurs in wet country of northern, eastern and southwestern Australia.

The *yarrae*- and *ovatus*-groups range exclusively over south-eastern Australia.

As pattern of distribution demonstrates, all species groups and most species belong to a mesophilous fauna, while single species only are able to live in dry country. This statement, however, is rather cursory, as far as we do not know, where the species actually live. Unfortunately, little information is available upon ecological requirements and habitat choice, since most species were commonly collected at light and many of the older specimens do not bear any information to collecting circumstances. Collecting by light trap, however, has the disadvantage to preclude any precise identification of the real habitat.

In a short review I shall try to summarize, what is actually known:

*Mooreana*: Unknown, perhaps in rain forest litter.

*Metabletus*: Unknown, single specimens collected in open woodland.

*M. yarrae*: Unknown. Due to loss of flying ability perhaps in leaf litter.

*M. australiensis*: Unknown, some specimens in leaf litter.

*M. parallelus*: Unknown.

*M. flavicornis*: Largely unknown, single species in rain forest litter and at light.

*M. macleayi*: Little known, mostly collected at light. Some specimens from leaf litter. Commonly found in rather dry areas.

*M. pseudohumeralis*: Unknown, single specimens from leaf litter. Generally recorded from rather humid areas.

*M. rufoniger*: Little known, nearly all specimens at light. Prevailing in open woodland to dry savannah and semidesert, but mostly near water.

*M. inoculatus*: Little known. Most specimens from light in the same habitats as *M. rufoniger*.

*M. atrifasciatus*: Little known, single specimens at light and in leaf litter, but without indication of sort of habitat.

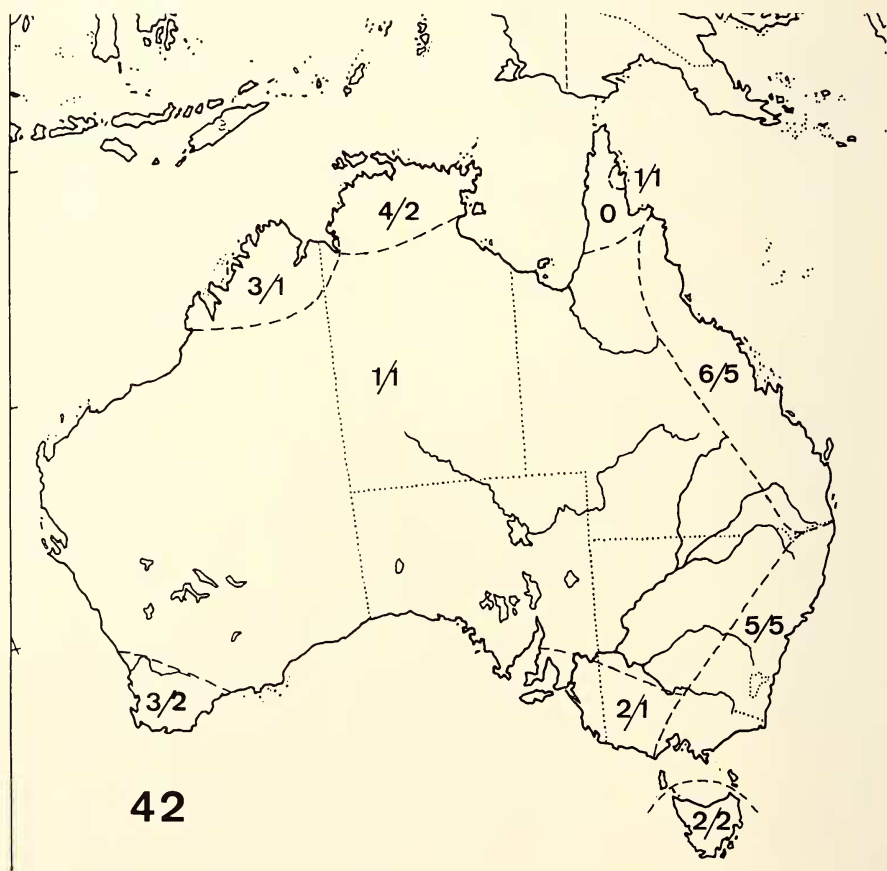


Fig. 42. Distribution of species and groups in the natural zoogeographical subregions of Australia. Species noted at first place.

*M. zonatus*: Unknown, perhaps in leaf litter of open forest.

*M. cinctus*: Unknown.

*M. ovatus*: Montane species, living in leaf litter of mountain Sclerophyll forests to Nothofagus forest in the northern part of range.

So far known, most species seem to live predominantly nocturnal, because captures during day time are apparently fairly rare and most species come readily to light. In spite of the poor informations we may conclude, that the litter life of *M. ovatus* and *M. yarrae* is presumably a rather derivative life style, the more, as both species show strong apomorphic adaptations to this life. Judging from the known habits of European, African, and Asian *Microlestes* and *Syntomus* which are at least partly diurnal and do commonly forage in the bright sun in dry, open habitats, the habits of the Australian *Microlestodes* seem generally more specialized.

As a conclusion, most parts of Australia differ conspicuously in diversity and phylogenetical status of their Dromiine fauna:

Northeastern Queensland has the most diverse fauna including the single undoubtedly Oriental faunal element (*Syntomus*), and it contains some rather derivative species.

Southeastern Australia is nearly as rich in species as northeastern Australia, but lacks species of other genera than *Microlestodes*. This region holds the most derivative species of the whole genus.

Tasmania has an impoverished southeastern fauna; both occurring species are rather derivative.

The fauna of southwestern Australia is rather poor; the species are rather generalized to slightly derivative.

In northwestern and far northern Australia the diversity is rather low, most occurring species are fairly derivative.

The Centre and the Far West contains a single, presumably generalized species only.

If the supposed phylogenetic status of the species is correct and the original habitat of *Microlestodes* was a more or less dry Savannah country, then ecological shifts occurred presumably within some species, either into rain forest or mountain forest, or into semi-desert and desert country.

#### Faunal history of Dromiini in Australia

Little is known on the faunal history of the Australian Dromiini, because we do not know exactly the next relatives outside of Australia and, moreover, no attempt has been made towards a phylogenetic classification of the whole tribe. This applies especially to *Mooreana* and *Microlestodes*, while *Syntomus* is evidently a rather young northern faunal element, immigrated along the New Guinea-Cape York bridge into eastern Queensland.

Only one rather highly evolved species of *Microlestodes* lives in New Guinea, all other species are endemic to Australia which is most likely the evolutionary centre of *Mi-*

*colestodes*. With respect to species and species group diversity the centre of the genus within Australia is either in eastern Queensland or in southeastern Australia. Besides of species common to both regions, they contain two closely related pairs of species, respectively, from two different groups: *M. atrifasciatus* – *M. zonatus*, *M. flavicornis* – *M. australiensis* (Queensland first, respectively). But southeastern Australia has also two specialized species absent from Queensland (*M. yarrae*, *M. ovatus*). Hence, eastern, perhaps northeastern, Queensland is presumably the original centre of *Microlestodes*, from where stocks invaded other parts of Australia. The Cape York Peninsula, however, has a surprisingly poor Dromiine fauna. Actually, no record of a *Microlestodes* is known to me from that area. This is further evidence of the Australian origin of *Microlestodes*.

The fauna of the northern tropical part of Northern Territory shows strong affinities to that of northern Queensland (*M. flavicornis*), as well as to the northwestern faunal refuge (*M. rufoniger*, *M. inoculatus*). The fauna of the northwest, however, is unique and does not correspondent with the North Queensland fauna, with exception of the widespread *M. macleayi*. This is evidence of an east to west dispersal of *M. flavicornis* and of the stocks of the *macleayi* group, using tropical Northern Territory as bridge.

Tasmania and southwestern Australia, on the other hand, were colonized by species from southeastern Australia or by very closely related offsprings of such species (*M. parallelus*). The rest of Australia, especially the vast desert countries of the central West and the Centre have been colonized only by the widespread *M. macleayi* which apparently spread also from the east over whole mainland Australia.

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